PUBLIC HEALTH REPORTS

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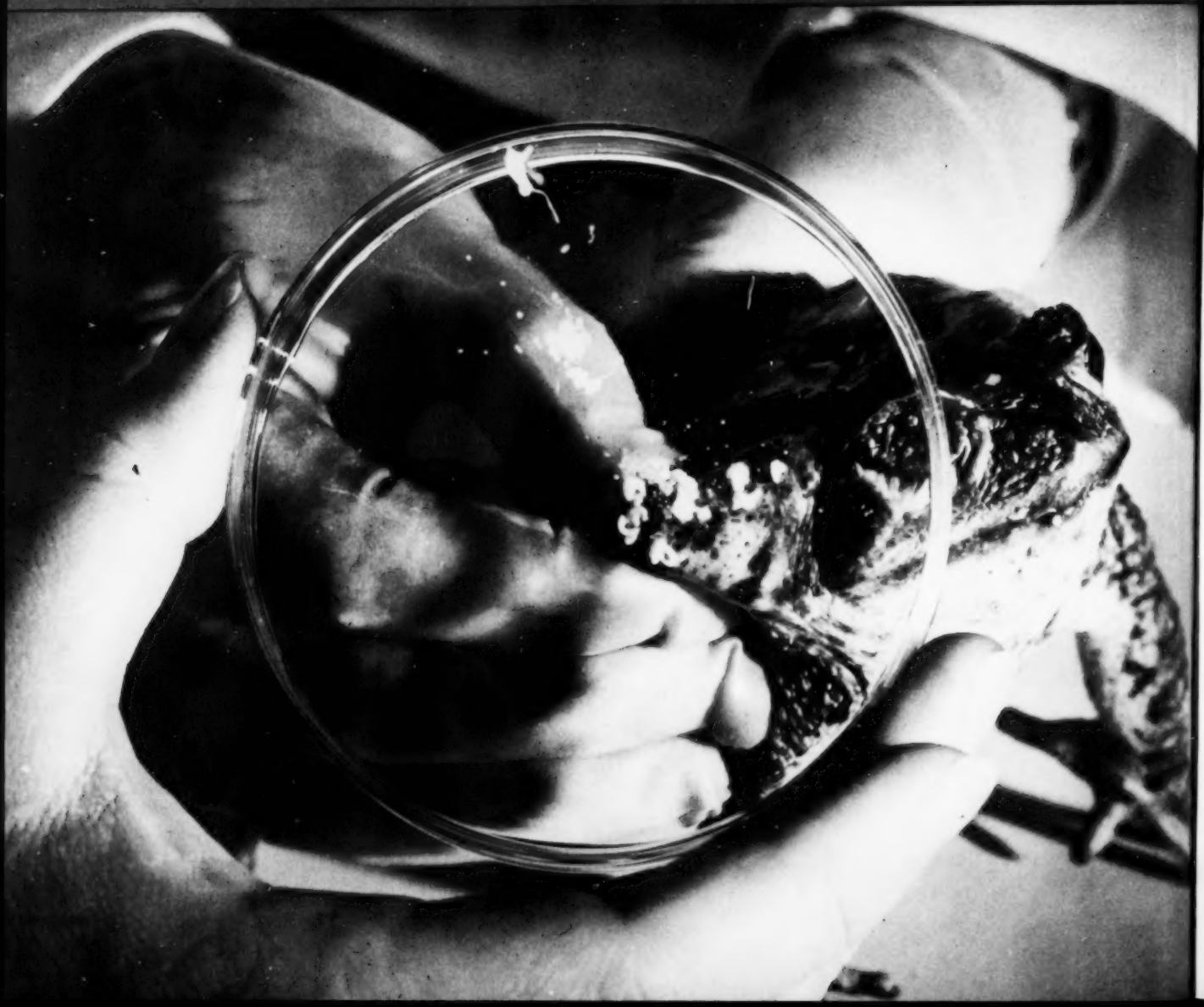
U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service

SEROTONIN

research

collecting venom from the toad, *Bufo marinus* *see overleaf*



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frontispiece . . .

The venom from the poison gland of a tropical toad (*Bufo marinus*) is used in the study of serotonin, an important body substance associated with hypertension. The venom is used also in the analysis of the biological formation of certain other substances which affect the cardiovascular system.

Although potent, serotonin occurs in small amounts in mammalian tissues, and other animals were investigated as sources. Tropical toads were found to have an excellent supply of the substance. *Bufo marinus* secretes large quantities of a venom rich in serotonin, a digitalis-like substance, and adrenalin in the large neck gland, which can be milked frequently.

The existence of serotonin has been known for only a few years and there is much to be discovered about what it does and how it is made. The parent substance of serotonin is the amino acid tryptophan, which can be converted to serotonin by enzymes in the kidney and liver. Tryptophan is in normal proteins contained in any average diet. Serotonin is present in many body tissues and in the blood stream in billions of floating disks called platelets.

In whatever way it is tested, serotonin is found to be an extremely powerful vasoconstrictor. It can so diminish the blood supply of the kidneys that the flow of urine is practically cut off.

Investigators are now working on how serotonin is made in the body, where it is formed, and how and where it is destroyed. A new amino acid (5-hydroxy-tryptophan) was discovered in this study and found to be the first step in the metabolic conversion of tryptophan. Now investigators will try to isolate the new amino acid in sufficient quantities to purify.

Steps in the conversion of tryptophan, and the new amino acid, were discovered by three scientists with the Laboratory of Chemical Pharmacology, National Heart Institute, National Institutes of Health, Public Health Service.

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Immune-Adherence Test for Syphilis

—Comparison With TPI and VDRL Slide Tests—

By SIDNEY OLANSKY, M.D., AD HARRIS, and HELEN CASEY, M.S.

Application of the adhesion phenomenon to detection of treponemal antibodies, if found practicable, may provide valuable assistance in syphilis diagnosis. Of particular practical significance is the use of killed T. pallidum *suspensions in the test.*

A REACTION between human erythrocytes and treponemes sensitized by antibody from syphilitic serum was first described by R. A. Nelson, Jr. (*1, 2*). In a later report (*3*) it was stated that "The specificity of this reaction for antibody in syphilis serum was established by examination of three hundred eighty-five (385) human sera." This report also stated that the results of this test, referred to as the immune-adherence phenomenon or reaction, "corresponded with the clinical diagnosis of syphilis and with the results of the TPI test [*Treponema pallidum* immobilization] in all except five (5) instances."

Since the immune-adherence reaction is technically a much simpler procedure than the TPI test and therefore would be a desirable substitute if found to be equally efficient, a study to compare these tests, not only with each other, but with the VDRL slide test and clinical diagnoses, was begun. The purpose of this report is to present findings obtained with these three serologic tests for syphilis and to compare these results with diagnoses and medical opinion. The immune-adherence reaction will be herein referred to as the IA test.

Dr. Olansky is director and Mr. Harris is associate director, and also in charge of the Serology Section, Venereal Disease Research Laboratory, Public Health Service, Chamblee, Ga. Mrs. Casey is a bacteriologist at the laboratory.

Methods

IA Test

Treponeme suspension was prepared from testicular syphilomas of rabbits. Mixtures containing 0.6 ml. of treponeme suspension, 0.1 ml. guinea pig serum (complement), 0.1 ml. of serum, and 0.2 ml. of washed human erythrocytes were heated at 37° C. for 30 minutes. The tubes containing these mixtures were then centrifuged (500 r.p.m., 5 min.) and the treponemes in the fluid phase were counted by dark-field microscopy. Controls including combinations of known positive and negative serums, with and without complement, and guinea pig

serum in saline were always a part of each test run.

The treponeme suspension used was adjusted so that approximately 100 organisms were present in 10 fields in the negative serum and in complement controls. Each test was read by placing 0.01 ml. of the fluid phase under a 22 mm.^{2} cover slip and counting the number of treponemes observed in 10 fields, using the high-dry objective of a darkfield microscope.

TPI Test

The method of Nelson and Mayer (*4*, *5*) as modified in this laboratory (*6*) was used in this study. Modifications included a five times increase of thioglycollate in the survival medium and a fourfold increase of complement.

VDRL Slide Test

The technique used for the VDRL slide test was exactly as originally reported (*7*, *8*) using antigen prepared and standardized at the Venereal Disease Research Laboratory.

Adequate Therapy. The syphilis patients in this study were considered to have had adequate therapy if they had received either: (*a*) 2.4 million units of penicillin or more, or, (*b*) 20 or more injections of arsenicals plus 20 or more injections of heavy metals. Good evidence regarding the syphilis status of the 305 patients selected for this study was obtained from sources other than the Venereal Disease Research Laboratory. These data included the results of physical examinations, personal and family histories, and laboratory findings. The results of laboratory tests recorded in this pa-

Table 1. Reactivity of the IA test on 234 syphilitic and 71 presumably nonsyphilitic patients

Zones	Treponeme count	Syphilitic patients (all stages)		Presumably nonsyphilitic patients	
		Number	*Percent*	*Number*	*Percent*
A	0–10	126	54	6	8.4
B	11–20	32	24	12	36.6
	21–30	25		14	
C	31–40	15	22	10	55.0
	41–50	10		6	
	51–60	7		5	
	61–70	6		6	
	71–80	5		4	
	Over 80	8		8	
Total		234	100	71	100

Table 2. Effects of time since adequate therapy or of absence of adequate treatment on the IA test performed on 234 syphilitic patients

Stage of syphilis, treatment received, and time since adequate treatment	IA test (treponeme count zones)			
	A	B	C	Total
Primary (44 patients)				
Untreated	5	3	1	9
Inadequately treated	1	----	----	1
Time since adequate treatment:				
0–6 months	7	5	----	12
6–12 months	2	1	----	3
1–2 years	----	----	3	3
3–5 years	2	1	9	12
6–10 years	1	1	1	3
Over 10 years	1	----	----	1
Total	19	11	14	44
Secondary (54 patients)				
Untreated	7	1	----	8
Inadequately treated	1	----	----	1
Time since adequate treatment:				
0–6 months	5	3	----	8
6–12 months	1	4	----	5
1–2 years	3	2	3	8
3–5 years	4	9	9	22
6–10 years	1	----	1	2
Over 10 years	----	----	----	----
Total	22	19	13	54
Latent (74 patients)				
Untreated	17	11	9	37
Inadequately treated	6	4	9	19
Time since adequate treatment:				
0–6 months	14	----	----	14
6–12 months	----	----	----	----
1–2 years	2	----	----	2
3–5 years	----	----	----	----
6–10 years	----	----	----	----
Over 10 years	1	1	----	2
Total	41	16	18	74
Late (62 patients)				
Untreated	27	7	4	38
Inadequately treated	14	2	2	18
Time since adequate treatment:				
0–6 months	4	----	----	4
6–12 months	----	----	----	----
1–2 years	----	----	1	1
3–5 years	----	1	----	1
6–10 years	----	----	----	----
Over 10 years	----	----	----	----
Total	45	10	7	62

per did not influence medical opinion, since these tests were performed after diagnoses were made.

Results

Table 1 shows the results of the IA test, in count groupings of 10, obtained on the 234 syphilitic and 71 presumably nonsyphilitic patients. Since positive, doubtful, and negative count zones have not been established for the IA test, 3 zones of reactivity have been selected for this discussion of the results obtained with this procedure. These zones are designed as A (0–10 treponemes, inclusive), B (11–30 treponemes, inclusive), and C (all treponeme counts greater than 30). The greatest degree of reactivity among the syphilitic patients is represented by the A zone since the reaction of the tested serum is maximum, or nearly so, when the treponeme count of the supernate is reduced to 10 or fewer. The B zone represents an intermediate type of reaction in which 11 to 30 of the treponemes are apparently unaffected by the serum being tested. The least reaction is encountered in the C zone, where 31 or more of the treponemes remain in the supernate.

More than half of the IA test results on syphilitic donors were in the A zone, while a similar percentage of findings were in the C zone on presumably nonsyphilitic donors. It therefore appears that syphilis, past or present, may influence the IA test. However, since all of the serums from syphilitic donors did not produce maximum reactions, and since some of these patients had had various amounts of treatment at some time prior to testing, a listing of results as related to therapy and time periods was made. This information is shown in table 2.

The results recorded in table 2 show that IA test findings may fall into all 3 groupings (A, B, and C) in each of 4 categories of syphilis listed. A greater number of these findings are in the A and A plus B groupings than were found in the C zone. Although 25 of these patients who had received either no specific therapy or inadequate treatment gave C-zone reactions, only one of these was found in the primary, and none in the secondary syphilis categories. Identical numbers of C-zone reactions were obtained from the primary and secondary syphilis patients who had had adequate therapy one or more years prior to testing date. The findings indicate that early syphilis, untreated, inadequately treated, or adequately treated less than 1 year before testing date, may produce an A- or B-zone finding in the IA test.

In the test results obtained on patients having latent or late syphilis, a slightly different picture is seen. A larger proportion of the test results in these clinical categories fall into the C zone, even though adequate therapy had not been received. The number of patients in each post-therapy observation period is not great enough to indicate the effect of treatment, in late or latent syphilis, on IA test findings.

The TPI and VDRL slide tests, in addition to the IA test, were performed on serums from each of the patients in this study in order to ascertain the relative position of these tests as aids in diagnosis. In no instance were the test results reported in this paper used for determining the status of syphilitic or presumably

Table 3. Relative reactivities of the IA, TPI, and VDRL slide tests for syphilis on 44 patients with primary syphilis diagnoses (treated or untreated)

IA test		TPI test			VDRL slide test		
Zone	Number of patients	Positive	Doubtful	Negative	Positive	Weakly Positive	Negative
A (0–10 treponemes)	19	11	0	8	9	1	9
B (11–30 treponemes)	12	7	0	5	1	2	9
C (31 or more treponemes)	13	0	0	13	1	0	12
Total	44	18	0	26	11	3	30

Table 4. Relative reactivities of the IA, TPI, and VDRL slide tests for syphilis on 54 patients with secondary syphilis diagnoses (treated and untreated)

IA test		TPI test				VDRL slide test		
Zone	Number of patients	Positive	Doubtful	Negative	Inconclusive	Positive	Weakly positive	Negative
A (0–10 treponemes)	22	15	1	5	1	10	1	11
B (11–30 treponemes)	19	6	0	10	3	4	2	13
C (31 or more treponemes)	13	3	0	10	0	0	1	12
Total	54	24	1	25	4	14	4	36

nonsyphilitic donors. The relative reactivities of these three tests are shown in tables 3–6. These tables are constructed so that agreement and total reactivity of each test may be visualized.

Table 3 shows that 19 A-zone reactions with the IA test, 18 positive reactions with the TPI test, and 14 positive or weakly positive reactions with the VDRL slide test were obtained on the 44 patients with primary syphilis (treated or untreated). The agreement between these tests appears to be closer when presented in this manner than it actually is, since the 19 zone A reactions in the IA test were actually accompanied by only 11 positive reactions in the TPI test and 10 positive or weakly positive reactions in the VDRL slide test. Seven of the 12 zone B reactions in the IA test were accompanied by positive reactions in the TPI test and only 3 of these gave positive or weakly positive reactions in the VDRL slide test. In this group more positive reactions were obtained with the IA and TPI tests than with the VDRL slide test. This may be a reflection of treatment effect since only 10 of the 44 patients in this group had not had adequate treatment.

In the secondary syphilis group, table 4, the greatest number of positive reactions were obtained with the TPI and IA tests and only 9 of these 54 patients had not had adequate treatment. The results listed in both tables 3 and 4 show that a similarity exists between the TPI and IA tests in that positive reactions may be obtained by these tests, in adequately treated early syphilis, after the VDRL slide test has returned to negativity.

As is shown in tables 5 and 6, there is closer agreement between the three tests in late or latent syphilis (treated or untreated) than was obtained in the early syphilis groups, under the same circumstances. Forty A-zone reactions with the IA test were accompanied by 36 positive TPI and 36 positive or weakly positive VDRL slide test results in the latent syphilis

Table 5. Relative reactivities of the IA, TPI, and VDRL slide tests for syphilis on 74 patients with latent syphilis diagnoses (treated and untreated)

IA test		TPI test				VDRL slide test		
Zone	Number of patients	Positive	Doubtful	Negative	Inconclusive	Positive	Weakly positive	Negative
A (0–10 treponemes)	40	36	0	1	3	32	4	4
B (11–30 treponemes)	16	3	0	13	0	5	1	10
C (31 or more treponemes)	18	13	1	4	0	2	0	16
Total	74	52	1	18	3	39	5	30

Table 6. Relative reactivities of the IA, TPI, and VDRL slide tests for syphilis on 62 patients with late syphilis diagnoses (treated and untreated)

IA test		TPI test				VDRL slide test		
Zone	Number of patients	Positive	Doubtful	Negative	Inconclusive	Positive	Weakly positive	Negative
A (0–10 treponemes)	45	42	0	2	1	37	2	6
B (11–30 treponemes)	10	7	0	2	1	2	0	8
C (31 or more treponemes)	7	4	1	2	0	0	2	5
Total	62	53	1	6	2	39	4	19

group. Forty-five A-zone reactions with the IA test, in the late syphilis patients, were accompanied by 42 positive TPI and 39 positive or weakly positive VDRL slide test results. In these two groups (74 latent and 62 late syphilis) only 24 had had adequate therapy, and 18 of these had had this treatment less than 6 months before these tests were made. It is therefore probable that these figures do not show the pattern obtained in early syphilis because, in most instances, enough time had not elapsed after adequate therapy to reverse the positive-reaction in the VDRL slide test.

In table 7 the results obtained with the three serologic tests on serum from 71 presumably nonsyphilitic individuals are listed. Several patients in this group were considered to be "biological false positive" reactors because of some degree of reactivity in one or more tests for syphilis, in the absence of signs or symptoms of infection, past or present, and with negative personal and family histories. Had all of these been omitted, on the basis of reactivity in 1 or more of the tests listed in table 6, then 1 or even all 3 of these tests could have been made to appear as being 100-percent specific. The results of the serologic tests herein presented were, in no instance, used as an aid in establishing diagnoses. Attending physicians did, however, have the aid of laboratory findings in making diagnoses.

The presumably nonsyphilitic group is more heavily seeded with positive reactors, in all three tests, than might randomly be encountered. However, this grouping allows the demonstration of what can happen when diagnoses of syphilis are finally resolved on serologic test findings. If it is presumed that a positive reaction in the TPI test is not encountered in the absence of treponemal infection and if, therefore, the 9 serums that react positively in this test are deleted, then the A-zone reac-

Table 7. Relative reactivities of the IA, TPI, and VDRL slide tests for syphilis on 71 presumably nonsyphilitic patients

IA test		TPI test				VDRL slide test		
Zone	Number of patients	Positive	Doubtful	Negative	Inconclusive	Positive	Weakly positive	Negative
A (0–10 treponemes)	6	1	0	4	1	2	0	4
B (11–30 treponemes)	26	2	0	23	1	1	1	24
C (31 or more treponemes)	39	6	0	33	0	5	1	33
Total	71	9	0	60	2	8	2	61

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tions in the IA test are reduced only from 6 to 5. However, since both the IA and TPI tests use the same virulent treponemes as antigen, and therefore may have the same base for presumptive specificity, the 6 serums giving A-zone reactions in the IA tests may be eliminated as probable syphilitics. If this is done, then the number of TPI positives is only reduced from 9 to 8. It is therefore apparent that differences may exist between the results of two or more tests using treponemal antigens in the same manner as happens between tests using beef-heart extractive antigen. It is also probable that maximum (A-zone) reactions with the IA test will be obtained in some instances when no other evidence of syphilis infection is present.

Conclusions

1. The pattern of reactivity of the IA test more closely follows the TPI test than that of the VDRL slide test.

2. Since the antibodies that produce positive reactions in the TPI and VDRL slide-type tests are known to be different, the substance producing such reactions in the IA test is probably similar to, if not identical with, the substance that activates the TPI test.

3. If the above conclusion is correct, then positive reactions in the IA test may be reflective of past rather than present syphilis infection.

4. Since the IA test is a simple, rapid laboratory procedure, and since antigen for this test need not be freshly prepared, this test may be a practical substitute technique for detecting the TPI test antibody.

Summary

1. The reactivity of the immune adherence (IA) test on 71 presumably nonsyphilitic patients and 234 patients with syphilis diagnoses is presented and discussed.

2. The relative reactivities of IA, TPI, and VDRL slide tests for syphilis in 305 previously diagnosed patients is shown and discussed.

REFERENCES

(1) Nelson, R. A., Jr.: *Treponema pallidum* immobilization test and the disappearance-adhesive phenomenon in syphilis. Presse méd. 60: 1719–1721 (1952).

(2) Nelson, R. A., Jr.: Changing concepts in the serodiagnoses of syphilis: Specific treponemal antibody versus Wassermann reagin. Brit. J. Venereal Diseases 28: 160–168 (1952).

(3) Nelson, R. A., Jr.: The immune-adherence phenomenon. An immunologically specific reaction between microorganisms and erythrocytes leading to enhanced phagocytosis. Science 118: 733–737 (1953).

(4) Nelson, R. A., Jr., and Mayer, M. M.: Immobilization of *Treponema pallidum* in vitro by antibody produced in syphilitic infection. J. Exper. Med. 89: 369 (1949).

(5) Nelson, R. A., Jr., and Diesendruck, J. A.: Studies on treponemal immobilizing antibodies in syphilis. I. Technique of measurement and factors influencing immobilization. J. Immunol. 66: 667 (1951).

(6) Portnoy, J., Harris, A., and Olansky, S.: Studies of the *Treponema pallidum* immobilization (TPI) test. I. The effect of increased sodium thioglycollate and complement. Am. J. Syph., Gonor. & Ven. Dis. 37: 101–105 (1953).

(7) Harris, A., Rosenberg, A. A., and Riedel, L. M.: A microflocculation test for syphilis using cardiolipin antigen. Preliminary report. J. Ven. Dis. Inform. 27: 169–174 (July 1946).

(8) Harris, A., Rosenberg, A. A., and Del Vecchio, E.: The VDRL slide flocculation test for syphilis. II. A supplementary report. J. Ven. Dis. Inform. 29: 72–75 (March 1948).

A Training Program For Medical Assistants

By JAMES BLOOM, M.D.

The individual physician's burdens are coming to be shared more and more by auxiliary personnel. Described are the conception and birth of an auxiliary which contributes to the conservation and amplification of medical manpower.

GRADUATES of the Harrisburg (Pa.) Institute of Medical Arts, a school for administrative assistants and secretaries, because of their unique training, are capable of taking medical case histories for screening by physicians and of doing expert work as medical or laboratory technicians.

Dr. Bloom is medical director of the health and welfare department of the International Ladies' Garment Workers' Union for central and western Pennsylvania. He is also on the staff of the Harrisburg (Pa.) Hospital. Dr. Bloom has pioneered in training young women for jobs as tumor clinic secretaries and medical history takers at the recently founded Harrisburg Institute of Medical Arts, where he is president of the board of directors. Public Health Reports published a short account of Dr. Bloom's experience with the ILGWU health survey program, which features referrals to private physicians on the basis of detailed medical histories, in the November 1952 issue (p. 1115).

The recently founded nonprofit school offers a course of training for tumor clinic secretaries, tumor clinic managers, or general medical assistants. This training has been made possible through the institute's affiliation and close relationship with the Harrisburg Hospital, which has a special tumor clinic program, and with the cooperation of the Harrisburg State Mental Hospital.

The institute offers an extensive curriculum not available in private schools. Most other schools, unlike the institute, have no affiliation with a hospital. It is believed to be the only school of its kind that is housed in a hospital. Generally, other schools training medical assistants are organized for profit. Tuition charges at the institute are $400 a year. The training course at Harrisburg extends over an 18-month period and is divided into three departments: secretarial, medical orientation, and

medical laboratory techniques. The total number of curriculum hours exceeds the standard 2-year college course.

Experimental Classes

When the demand for personnel became acute during the early 1940's, the medical profession and the hospitals suffered, along with industry, from labor shortages. Auxiliary nonmedical personnel were trained by the Armed Forces to assure the continuation of vital services, and the contributions of these specially trained intelligent young men have since earned enthusiastic commendation. From such experience and observations, the Harrisburg Institute was conceived, for the need for skilled workers to assist the medical profession and medical institutions was still urgent.

The first effort at training came as the result of attempts to solve a trying situation in the conduct of the tumor clinic program of the Harrisburg Hospital. It produced a tumor clinic secretary whose performance was greatly admired by hospital representatives who had occasion to attend sessions of the tumor clinic. One hospital made repeated, earnest pleas that a young woman be similarly trained for its tumor clinic.

A more formal effort at training was begun in June 1946 when one student was given a condensed, concentrated course of training over a 4-month period with commendable results.

The next class was composed of 3 young women, 2 of whom were graduates of a 2-year medical secretarial course. After 4 months' instruction, this group manifested the same high quality of training. The limited experience from this early training program, during which no tuition was charged, encouraged plans to establish a school with a formal course to train young women as auxiliary medical personnel. Such plans followed expert technical advice on planning the curriculum and on solving administrative and promotional problems.

The venture was launched by incorporating the institute under the Pennsylvania laws in the early part of 1948 and setting it up as an affiliate of the Harrisburg Hospital. Initial expenses were met from individual contributions. Later in 1948, approval of the Pennsylvania Department of Public Instruction was obtained.

Most of the 10 members of the school's board of directors are on the staff of the Harrisburg Hospital. Two members, the director of vocational education of the Harrisburg School District and the public relations officer from the Pennsylvania State Department of Agriculture, assisted with the early organization of the institute. The superintendent of the Harrisburg State Hospital is also on the board, and another member is a local businessman. The directors serve without pay.

Admission Requirements

Classes were small at first and even now are limited to only 18 students. Admission requirements include graduation from an accredited high school or its private school equivalent, a scholastic rating in the upper two-fifths (or upper half) of a class, and a favorable evaluation of the applicant's character and personality based on a required personal interview. At least twice as many applicants have been rejected as have been accepted.

Special provision is made for those who have already acquired secretarial training outside the institute to permit them to take the additional training necessary for graduation. The courses of study are of college grade, sufficiently broadened to equip the student with special skills, and lead to special certificates awarded by the institute's board of directors.

The institute's program of instruction might be judged ambitious, even presumptuous, but experience has established its practicality. Here, a note of explanation is imperative—the only purpose of the elaborate prospectus issued by the institute is to develop an understanding of, and interest in, the work which the student will be called upon to perform upon graduation.

Let's consider anatomy, for example. Naturally, there is no thought of conveying the impression that this is a course of great detail and including the anatomical minutiae. This would be superfluous, if not actually ridiculous.

The goal is only to develop an intelligent understanding of anatomical matters as they concern a medical assistant. The same applies to the other subjects in the curriculum which might be considered "ultra." In choosing students from among the higher brackets of scholastic accomplishment, the institute is dealing with young adults who get no satisfaction from doing a task mechanically—they like to know something about the work they are called upon to do and something about the subjects with which they are dealing.

Secretarial Training

The institute emphasizes certain points in the training program which will make its graduates particularly useful both in the tumor clinic and in the private physician's office. The outstanding feature of the program stems from the skill the youthful medical assistants acquire in taking medical histories. This is of significance in conserving the time of the tumor clinic physicians. The comprehensive history which these young women are trained to take becomes a valuable part of the record of the potential cancer case (see inset). A physical examination is not nearly so effective, in the opinion of many physicians, in discovering the presence of chronic disease as is a carefully taken medical history. If the history can be supplemented with selected laboratory determinations, a conscientious physician or medical director can then determine the patient's need for further diagnosis and treatment.

An ability to write rapid, accurate stenographic notes and to transcribe them with accuracy, coupled with an understanding of medical terminology, are the two primary essentials of an efficient medical secretary. Hence, medical shorthand, typewriting, and general training in secretarial practices plus a study of medical terminology and nomenclature take first place in the institute's curriculum.

Medical Assistant Training

Instruction for training the young women as medical assistants includes subjects which provide the best opportunity for practical orientation in the field of medicine. The objective of this phase of study is obviously not to endow the student with an ability to practice medicine. Merely by developing an understanding and interest in her work, however, it prepares her for intelligent assistance to the physician.

Medical orientation includes constructive courses in anatomy, physiology, pathology, medical psychology, medical ethics, materia medica and prescription writing, a basic course in bacteriology, and an introduction to medical science through lectures in the medical specialties. It also covers instruction in first aid, in the nursing arts with special application for the physician's office practice, and in office procedure and conduct.

Graduate of the Harrisburg Institute of Medical Arts taking a medical case history—part of the service of the mobile health survey project, International Ladies' Garment Workers' Union, in central and western Pennsylvania.

The few nursing arts required in the physician's office are easily mastered; for example, the simple art of draping a patient for the different examination procedures, the techniques of instrument sterilization, and the preparation of medication for parenteral administration. There is no thought of replacing the nurse, but certainly, with the shortage of graduate nurses, she has more vital obligations at the

(*Continued on page 531*)

Medical History

(First work assignment of a 19-year-old graduate of the Harrisburg Institute of Medical Arts)

Mrs. D. L., Camp Hill, Pa., 2/4/54.
Age: 30; Children: 1; B. P.: 110/80.

C. C.: (1) Headaches.

(2) Intermenstrual bleeding. She describes this as "just like when I had the tumor."

H. P. I.: Patient first became aware of intermenstrual bleeding a year ago. She experiences this bleeding 3–4 times weekly. The discharge is described as a mixture of blood and a clear, colorless fluid. The headaches are attributed to worry about the condition just mentioned. Patient does not remember when the headaches first began to occur. She sometimes experiences nausea with these headaches and takes 2–3 aspirins almost every day with little or no relief.

WEIGHT: 115 lbs. This is her best weight.

HEIGHT: 5 ft., 1 in.

HEAD: Headaches described above. Dizziness associated with menstrual periods. No fainting.

EYES: Wears glasses for close work. Considers vision to be good. No abnormalities.

EARS: 0.

NOSE: 0.

MOUTH: Full complement of teeth which are said to be in good condition. No abnormalities.

PHARYNX: Tonsillectomy at the age of 8 with no complications. No abnormalities.

RESPIRATORY: Experiences "slight night sweats." These are attributed to "nerves." No abnormalities.

CARDIAC: Ankle edema while working and close to menstrual period. No abnormalities.

G. U.: No abnormalities.

MENSES: Regular 28 days. Duration 3–5 days. Flow: Profuse the first few days with "clotting," then moderate. Dysmenorrhea the first day. Two years since last internal examination.

O. B.: One pregnancy. She was told by her physician that "she was too small and the baby was too large;" however, pregnancy was full-term and delivery normal. She says that ever since the birth of her child, 11 years ago, she has had "trouble."

G. I.: Patient says that sometimes her appetite is good and other times she has no desire to eat. Qualitative dyspepsia for candy, fruit, and "starches." "Always" experiences quantitative dyspepsia. This condition first occurred 2–3 years ago. Patient has to take laxatives "most of the time." No rectal bleeding, no hemorrhoids.

NERVES: "Very bad."

EXTREMITIES: "Pain in the knees all the time." Patient first became aware of this condition about 2 months ago.

P. M. H.: Patient always enjoyed good health until the birth of her child. No serious illnesses. Five years ago she had a tumor removed from her uterus. Hospitalization—14 days.

FAMILY HISTORY: Father, age 62, contracted tuberculosis about a year ago. As far as the patient knows he is well at this time. She says they keep his lung collapsed, and he goes to the hospital once a week for treatments. Mother, age 62, had a "touch of skin cancer on the lip" about 2 years ago. Patient says the cancer is now "cleared-up." Three sisters. One sister has cancer of the "stomach." Patient says this sister has had five operations and now all they do is "tap" her. A second sister, also suffering from a tumor, had an operation in which "they removed most of her insides." Patient says this sister "doesn't look good." This sister is now being given weekly "shots." A third sister who had "kidney stones" is now in good health. Two brothers living and in good health. Patient reveals that all of her "mother's people" have died of cancer.

SOCIAL: Sleeps 10–11 hours nightly but does not rest well. No cigarettes, no alcoholic beverages. Husband living and in good health. Diversions: Watching sports, movies, dancing.

Dr. X, Camp Hill, Pennsylvania.
Last saw him 1½ years ago because she thought uterine tumor was "growing back." No laboratory studies done.

Lat. imb.: 7 Bil. vis.: 20/29 Rt. eye: 20/25 Lt. eye: 20/25.

EDITOR'S NOTE: To protect the identity of the patient, initials and location have been changed.

bedside. Only a limited portion of her training is applicable in office practice.

Laboratory Techniques

Students are given several months' training in photography also and are taught how to assist in the modeling, painting, and preservation of moulages. They are trained in the basic mechanics of laboratory procedures and in the clinical significance of these procedures. These take in the most commonly employed laboratory tests and examinations and include complete blood counts, urinalyses (physical, chemical, and microscopic), blood sedimentation rates, and blood chemistry tests such as blood sugar and blood urea determinations. Practical work assignments are provided in the laboratories of Harrisburg Hospital.

Unlike many courses in medical technology, where the specimens studied are those taken from the students themselves, students at the institute have access to an almost unlimited supply of material from hospital patients who represent a great variety of pathology.

The medical assistant, properly trained, has an important advantage in that she can perform all of those laboratory procedures which a private practitioner would like to do in his own establishment. It requires little imagination to recognize such an advantage—there is less or no hesitancy in ordering those tests which would facilitate more accurate diagnoses at a more moderate cost to the patient and with greater satisfaction to the practitioner.

The Hospital Setting

With the exception of the secretarial courses, which are provided by special arrangement with a well-established secretarial school in Harrisburg, all instruction is given at either the Harrisburg Hospital or the Harrisburg State Hospital. The school emphasizes direct contact with the professional staffs of both institutions.

To familiarize students with methods of hospital administration, each is required to spend a prescribed period of time assisting in the administrative departments of the Harrisburg Hospital. Various other departments of this hospital are available for classroom, research, library, and other instructional uses. These include the school of nursing, X-ray, and photographic rooms.

The trainees are given an opportunity to become thoroughly familiar with medical procedures by attending and observing transactions of the tumor clinic at Harrisburg Hospital. They must attend 12 autopsies. They are required to attend clinics and to sit in on and observe actual staff meetings of the Harrisburg State Hospital.

Following attendance at operations, clinics, and staff conferences, "quiz" sessions are conducted. Students are required to ask questions of the physician in charge and to participate in discussions relative to the cases and the related discussions. Such conferences between the students and the professional staff build valuable learning experiences and develop an orientation which is of great value in the work for which the student is being prepared.

Whenever possible, the teaching staff is selected from Harrisburg Hospital's own medical staff and from among its graduate nurses, medical record librarians, laboratory technical personnel, and the institute's own graduates working at the local hospitals or working in Harrisburg. Psychologists and an instructor in bacteriology have supplemented the instruction given by the hospital staff. All nonmedical teaching personnel are paid a variable stipend on an hourly basis, and the medical components of the teaching staff are offered an honorarium. Some physicians have contributed their services.

Demand for Graduates

The demand for trainees far exceeds the supply. Students are assigned to their future jobs long before graduation. Employers have frequently asked for additional graduates.

Approximately 61 students have been graduated. Twenty of these are working in physicians' offices, 20 in hospitals, and 4 each are working in clinical laboratories and in medical assignments in government military installations. Six are employed by the mobile health survey program of the International Ladies'

Garment Workers' Union. Two are working in insurance company medical departments, and three are engaged in State health department cancer activities. One graduate is employed by a manufacturer of pharmaceutical chemicals and another by an engineering company.

The increasing number of teaching enterprises being created for the purpose of training medical assistants is substantial proof that there is a quickening recognition of the medical profession's need for trained assistants to lighten its ever-increasing burdens.

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Sanitary Engineering in "Operation TULIP"

By HARVEY F. LUDWIG, M.S.

AN EXTRAORDINARY combination of physical conditions—very high tides together with very high onshore winds—produced the flood of February 1953 along the southwest coast of the Netherlands. In this disaster, one of the worst natural disasters of modern times, more than 1,700 persons were drowned, and the entire economy was disrupted in an area making up one-fifth of the country. Extremely low temperatures and poor visibility greatly increased the damage caused by the inundation of the land.

Even more extraordinary than the physical conditions, however, and equally important in determining the damage done, was the attitude of the people subjected to the flooding. Although living their entire lives below sea level, the people, mostly farmers deeply rooted to the area, seemed to have become virtually oblivious to their danger because no natural flood of significance had occurred for more than 400 years. The statistical once-in-hundreds-of-years combination of wind and tide was apparently more than matched by a once-in-hundreds-of-years psychological setting. The people did not believe themselves in real danger and hence failed to heed initial signs of danger. Consequently, they failed to alert either themselves or the outside world to prepare for emergency aid.

The first major dike breaks occurred early Sunday morning, February 1, shortly after Saturday midnight. The telephone system—almost the only communication with the mainland—soon failed. Not until Sunday night did the seriousness of the situation become known, and, according to the American military personnel who first arrived on the scene, even then there was almost complete lack of intelligence on details. During the subsequent emergency relief operations, most of the critical intelligence had to be developed on the spot by the relief workers themselves. Relief operations

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Mr. Ludwig is the engineer consultant for health emergency planning, Office of the Surgeon General, Public Health Service. *This paper is based on information Mr. Ludwig collected in April and May 1953 as a member of a team sent to Germany and the Netherlands, by the Committee on Disaster Studies of the National Research Council, to study the role of the American military forces in the Netherlands disaster relief operation. It was presented at a meeting of the National Research Council's Committee on Sanitary Engineering and Environment on December 15, 1953. A complete report of the team's study, known as Operation Tulip, is available from the Committee on Disaster Studies.*

were further hampered by the fact that there were few—if any—plans for coping with such an unexpected emergency.

Organization of American Participation

American military assistance was provided, on request, to the Dutch military forces, which, in turn, were assisting the Dutch civil authorities in charge. An American military relief headquarters (AMRO) was established at The Hague on Monday, February 2, to maintain close liaison with the Dutch authorities. At the same time, an American field operations headquarters was established at Breda, close to the flooded area, and the commanding officer of the 39th Engineer Construction Group at Ettlingen, Germany, was placed in charge of the field operations. The American forces, totaling about 2,000 men, were principally engineer troops from the 39th Engineer Construction Group (Ettlingen), the 795th Engineer Dump Truck Company (Kaiserslauten), the 1279th Engineer Combat Battalion (Höchst), and the 8540th and 8542nd Engineer Amphibious Truck Companies (Bensheim and Rüsselsheim). Air Force cargo planes, Army and Air Force helicopters, and a group of Navy vessels from the Rhine River Patrol, also gave important assistance. Some rescue operations were commenced Tuesday afternoon, although the bulk of forces were not in action until Wednesday.

The critical emergency period—when people were drowning—extended through Wednesday evening. The American rescue forces were able to participate, unfortunately, only during the very end of this period. Even so, their facilities—especially the helicopters and amphibious trucks (dukw's)—were of vital importance since virtually no other type of equipment could reach the victims. The critical or rescue phase was followed by major engineering operations, mostly dike repair or strengthening, in preparation for an anticipated second flooding forecast for about February 16. Although this second emergency never developed, its expectation gave the engineering operations much more of an emergency character than otherwise would have been the case.

Health Aspects

In the health field, sanitary engineering operations, especially emergency water supply and treatment, were of major importance from the point of view of American military participation. All medical problems of the Dutch were handled by the Dutch Red Cross, with American military medical units (including one mobile surgical hospital) serving only to support the American troops. There were no epi-

An American H–13 helicopter departs on a rescue mission.

demics or any significant incidence of communicable disease.

An Army sanitary engineer officer from American military headquarters (USAREUR) at Heidelberg, Major C. R. Lewis, was from the outset a member of AMRO. He represented the Chief Surgeon, USAREUR, Major General Guy B. Denit, for all of General Denit's interests, medical as well as engineering. General Denit made this selection in anticipation that the critical needs would be in emergency sanitation rather than in casualty care.

Although the American military were instrumental in furnishing various emergency sanitation and emergency mortuary supplies to the Dutch authorities, and, incidentally, in locating some of these supplies from sources within the Netherlands, provision of emergency water supplies was the only significant health problem with which they were concerned. For this purpose, 29 mobile water purification units were sent to Breda, 19 of which were deployed for action. Because of the intense cold, there was no vector control problem, despite the many thousands of dead farm animals and approximately 1,700 humans who were drowned. Although some attempts were made to dispose of dead animal carcasses by burning, the Dutch preferred to and did salvage many of them by converting the carcasses to fertilizer.

Two Navy patrol boats (PR's)—the fastest boats on the scene—were helpful to the Dutch Red Cross for emergency evacuations, delivering medical supplies, and dispatch purposes.

Emergency Water Supply Problems

Most of the local water supplies for the communities in the flooded area, as in all of western Holland, are derived from sand dunes, which act like blotters to collect and store rain. Some of the island communities have no local sources

Left: At Nieuwetonge on Overflakkee Island 2 weeks after the area was first flooded, the water has partially receded. Right: A water tank brings drinking water to the people on Schouwen Island.

of water but are supplied from the mainland by transmission lines or, in a few instances, by boat. The flood caused the breaking of transmission lines, contamination of dune supplies or of trenches delivering water from the dunes to the towns, and flooding of pumping equipment.

The emergency situations on the islands were met by two methods: by hauling water from the mainland by boat and by use of the mobile purification units. For boat hauling, the Dutch employed primarily water tankers normally engaged in supplying shipping in the Rhine River, but also a number of other tankers which had to be cleaned for water use. Tanker capacity became increasingly available as the emergency continued, and the need for the water purification units decreased accordingly.

The 19 purification units deployed to the flooded area saw action principally at communities on Walcheren Island and at the relatively large port city of Dordrecht. Two units were used in support of the American troops, one at Breda and the other at Steenbergen, an advance field post serving as coordinating point for the dukw companies. On February 12 seven of the units were sent to 's Hertogenbosch, the Dutch military field headquarters, where they were used for training Dutch soldiers in the techniques of operation and maintenance.

On the morning of February 3, a sanitary engineer from the Dutch Government Institute of Water Supply at The Hague was dispatched by the institute's director to Walcheren Island to review an emergency situation at Vlissingen, a town being used as a staging area for people collected from isolated points. This town is normally supplied with water through a dual system: a transmission line from the mainland, which had broken, and a dune system of limited capacity which becomes brackish if overpumped. Vlissingen itself is the source of supply for Nadorst, a large Indonesian refugee camp on the island, but under the circumstances, it was unable to furnish water for the camp.

About noon on February 3, the engineer from the institute learned from The Hague that American mobile units might be available, and, through the Dutch military headquarters, he promptly requested units for Vlissingen. The first two units arrived at 6 p. m., and two more later that evening. They were sent from Breda to the island via Belgium, without any border-passing difficulties. One of these units was assigned immediately to Nadorst, where it supplied the water needed for washing and other purposes except for drinking (drinking water was supplied by boat). Brackish ponds were the raw water source.

On February 10, the three units remaining in Vlissingen were transferred to Domburg, another town on Walcheren Island where the normal supply was out due to a broken transmission

line. The units furnished 75,000 gallons of water a day, taking raw water from a pond in a bomb crater on a golf course. On February 16, the units were withdrawn as part of the general American plan for withdrawal of aid, since it had by then been determined that the emergency period had passed. The withdrawal order alarmed the people of the community, who had not much confidence in the emergency repair which had been made on the transmission line, and they threatened to oust the town burgomeister if the units were removed.

At Dordrecht, on the mainland, emergency assistance was requested when the pumps boosting water from the main reservoir into the distribution system became flooded. Here eight of the mobile units served from February 6 to February 9 as substitute pumps. Beginning February 9 they also undertook filtration and chlorination when excessive drawdown on the reservoir made the water turbid. The units were on hand at Dordrecht a full day before they were placed in use—a period when they were badly needed. The delay was due to the fact that the municipal officials were overwhelmed by problems they considered to be even more immediate.

Emergency Water Supply Techniques

Several interesting lessons were learned from the use of the mobile purification units during the Holland flood disaster. It was found that requests for assistance received through the formal channels were generally unreliable or out of date as to details. Accordingly, the officer in charge of the mobile units adopted the practice of sending a two-man reconnaissance team to the sites reportedly needing aid, to ascertain that the needs did exist and that the mobile units could meet them. Some of the requests were based on the mistaken belief that the units could remove salt from seawater. In all reported instances, however, it was possible to locate fresh or brackish water ponds or ditches suitable as a raw water source.

Some difficulties were experienced in communicating with various units assigned to various sites. Reliance had to be placed on either messengers, local telephones, or incidentally available military radio. However, the difficulties were not considered sufficient to warrant placing organic radio equipment on the units.

A minor problem developed in regard to chlorination. In general, the communities in the area do not practice chlorination and object to it. The operators of the units, of course, produced water having a chlorine residual of 2.0 p.p.m., in accordance with the instructions given them through Army channels. This conflict did cause difficulties, but the people's opposition became insignificant when actual use of the product showed no ill effects. At Domburg, the Americans did reduce the chlorine residual, from 2.0 to 1.5 p.p.m., in response to complaints. An important factor in maintaining public confidence was the certificate of competence carried by each unit crew. The burgomeisters accepted these certificates as positive proof that the operators knew their business.

Evacuation Problems

Some of the experiences in the evacuation operations are also of interest to health authorities. The people living in the area were often extremely reluctant to leave their homes and communities even, in some instances, when danger of drowning seemed imminent. Many refused to leave without taking along their farm animals. Others feared that, if they did leave, their homes would be looted or that, if not flooded, assigned by the Government as temporary billets for other persons. At one town (Zierikzee) it was necessary, despite pleas delivered in person by Queen Juliana and Prince Bernhardt, for the Government to agree to post guard before the people permitted themselves to be evacuated. Scarce transport facilities had to be assigned to supply persons refusing to be evacuated.

1953 Summary of Disease Outbreaks

By C. C. DAUER, M.D., and GRANVILLE SYLVESTER

DISEASE NOTIFICATION in the United States on a nationwide basis was proposed a half century ago. The Surgeon General of the Public Health Service made certain suggestions to the newly organized group of State health officers, which later began to study the problem and make recommendations. At that time only smallpox, diphtheria, scarlet fever, and typhoid fever were notifiable in most States, but little effort was expended to collect data from all States, since many of them had no personnel to assemble case reports from physicians and to tabulate the data. It was not until 1912 that data with some semblance of national morbidity statistics were made available.

Most of the statistical information on infectious diseases published weekly or monthly one-half century ago was derived from reports of deaths from a few diseases, which came from scattered areas, usually cities. Numbers of smallpox cases from certain areas were published weekly in *Public Health Reports*, and plague and yellow fever cases were also shown. (Plague was then occurring in San Francisco, and an occasional case of yellow fever was seen in southern port cities.)

Epidemics were common occurrences, especially of typhoid fever, diphtheria, scarlet fever, and smallpox. The role of water and milk in typhoid fever outbreaks was well understood, and oysters had been shown to be a vehicle of infection in at least one epidemic in the United States. While the existence of typhoid carriers was known, their significance was just beginning to be realized. (Typhoid Mary was discovered in the winter of 1906–1907.) Flies had just been demonstrated as carriers of infection. The few instances of milkborne diphtheria and streptococcal infections were overshadowed by a high incidence of these diseases each fall and winter in which there was person-to-person transmission of infection. The concept of food poisoning was limited to relatively rare instances of "ptomaine poisoning" and occasional cases of botulism, but the role of staphylococci in food poisoning apparently was not suspected. The possibility that foods, exclusive of milk and milk products, could be vehicles of infection was limited to trichinosis from ingestion of raw or insufficiently cooked pork products and to certain intestinal infections following the eating of raw vegetables grown on sewage-contaminated soil or of improperly handled vegetables and fruit.

In the period since 1903, notifiable or communicable disease reporting has developed gradually to include a relatively large list of diseases which are reported regularly on a weekly and annual basis by all States and Territories. As early as 1912, it was recommended that upon the occurrence of an unusual outbreak or sudden increase of certain diseases a report be made to the Surgeon General of the Public Health Service. However, it was not until 1923 that the Public Health Service began to collect an-

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nually reports on milkborne disease outbreaks from State and local health authorities. Prior to this time knowledge of these outbreaks was limited to those reported in medical and public health journals. Reports of outbreaks conveyed by other foods and those caused by faulty sanitation in general were not collected until 1938, and a systematic collection of all types of disease outbreaks was not made until 1951. The latter has included reports on epidemiological investigations of small groups or even single cases of diseases which are of public health importance.

In 1953, 11 States and 3 Territorial health departments reported no foodborne or waterborne disease outbreaks, but 4 of these States and 1 Territory reported on some other form of unusual disease occurrence. This indicates that the present reporting program is by no means complete or satisfactory. It also indicates that the importance or desirability of investigation and notification of disease outbreaks is not universally appreciated at either the State or local level. In some instances, lack of personnel may have been a deterrent to investigation and reporting.

Insofar as foodborne and waterborne disease outbreaks were concerned, there was little change in character of reports received in 1953 compared with the past few years. Milkborne and waterborne outbreaks were few in number, but those in which other foods were vehicles of infection were as numerous as ever. Of more importance was the large proportion of outbreaks in which inadequate refrigeration of food was discovered; the numerous instances of food preparation by persons with infections on their hands or other exposed parts of the body; and the number of instances of poor food-handling practices.

This apparent lack of improvement in the fundamentals of preventing food poisoning or infection outbreaks parallels the experience recently reported in England and Wales for 1951 and 1952 (*1*). A report on Food Poisoning in England and Wales closes with the observation that the "information obtained in 1951 and 1952 indicates that the campaign for improvements in hygiene of food handling has had no appreciable effect on the incidence of food poisoning."

It was also stated that caterers and manufacturers of processed foods probably did not know how to apply in their own establishments the theoretical knowledge which had been given them in lectures and demonstrations. Application of simple techniques which the food handler could understand and which were suited to individual establishments appeared to be more effective than theoretical advice in lectures and publications.

As in previous years the information contained in reports of investigations of disease outbreaks has limited value from the standpoint of statistics. For instance, the total number of cases of typhoid fever reported in outbreaks represents only a fraction of all cases reported weekly or in annual summaries. However, the figures are of value in giving information on the frequency and size or extent of outbreaks.

Waterborne Disease Outbreaks

Eleven outbreaks were reported in which the epidemiological investigation or laboratory test indicated that water was the vehicle of infection, and in five others the possibility of water transmission was considered.

Three of the 11 outbreaks were typhoid fever; one was demonstrated or confirmed by laboratory tests and the others by epidemiological evidence. In Ohio a group of 9 persons with typhoid gave a history of having used water from wells which had been contaminated by excretions of a typhoid carrier. The typhoid bacillus was isolated from the water of one well by use of the membrane filter technique. In Kentucky 13 cases of typhoid fever followed eating in a restaurant where water from wells was shown to be polluted. In another State 2 members of a family who swam in a river subsequently developed typhoid fever.

Three waterborne outbreaks of bacillary dysentery were reported. In one, 450 cases occurred in a school where the well water supply became contaminated by seepage from a septic tank. Another occurred in a boys' camp where the chlorinator attached to the water system failed when lightning put the equipment out of order. The third outbreak occurred in a resort area where the well water supply was found polluted.

Unspecified types of gastroenteritis occurred in five outbreaks in which cross connections, back siphonage, and polluted wells were associated with the occurrence of cases.

The 5 outbreaks in which water transmission was considered a possibility included 4 of infectious hepatitis, 1 in each of 4 States, and an outbreak of gastroenteritis which occurred aboard a train enroute from Chicago to Florida.

It is noteworthy that no outbreak was reported in which a city water distribution system was involved or at fault.

Milkborne Disease Outbreaks

The number of outbreaks (*4*) in which milk and milk products were involved was smaller than for any previous year, and none involved a fluid milk supply.

Homemade ice cream was shown to be the vehicle of infection in two instances. In one, *Salmonella typhimurium* was isolated from a cream strainer and ice cream freezer following the outbreak—none of the ice cream was available for laboratory examination. In the other, ice cream eaten by 11 of 14 persons attending a church social caused an illness due to *Salmonella montevideo.* An outbreak of bacillary dysentery, Flexner type, followed the eating of a cream cheese in the dining hall of a college. It was postulated that the cheese was contaminated while it was being prepared for serving. The fourth outbreak was considered to be a staphylococcic contamination of a homemade cheese which resulted from improper handling of the food.

Shellfish

One outbreak of gastroenteritis, consisting of 16 cases, followed the consumption of oysters taken from an oyster bed on the California coast. Laboratory examination of specimens taken from the beds showed evidence of contamination. Improper handling, including lack of refrigeration, was also considered to be a contributing factor in the outbreak.

Several outbreaks of gastroenteritis were reported in New York City and vicinity in which crab meat was regarded as the vehicle of infection. In one outbreak, which occurred in a large hospital, *Shigella flexnerii* was isolated from the stools of three patients. However, no specimen of the crab meat served was available for laboratory examination.

Other Foodborne Disease Outbreaks

As shown in the accompanying table, disease outbreaks in which foods other than milk and milk products were found to be the vehicle of infection now constitute the bulk of all outbreaks reported. It is remarkable that there has been no significant decrease in staphylococcal food poisoning and food infections, such as dysentery, salmonellosis, and unspecified types of gastroenteritis, considering the amount of attention given to restaurant sanitation. As previously pointed out, the personal element involved in food-handling practices, that is, lack of appreciation of the importance of personal cleanliness and protection of foods by refrigeration apparently has not been given the attention it deserves.

Typhoid Fever

Fewer outbreaks of typhoid fever were reported in 1953 than for the previous year, and the number of cases was also considerably lower. The largest one reported consisted of 13 cases.

In five outbreaks carriers, not previously known, had prepared food. One outbreak was in a school; one carrier prepared food for a wedding reception; another was a family outbreak of 4 cases; and the fourth occurred among patrons of a restaurant. Another carrier was discovered who had contaminated the wells used in a small settlement. The carrier and several of the nine cases were found to have the same phage type of organism.

In one outbreak a group of 13 cases followed eating in a restaurant. No carrier was found among the food handlers, but a contaminated well water supply, demonstrated by laboratory tests, was thought to have been caused by seepage from a sewage disposal field. A carrier, possibly a traveler, may have been the original source of infection.

One group of cases was reported in which contact was regarded as the mode of spread. The investigation revealed that in two of the cases the persons with typhoid fever had re-

cently arrived from a city outside the United States where a large outbreak of typhoid was in progress. Spread from these index cases was limited to a family group. Another outbreak occurred in a community in which contact between cases seemed to explain the mode of spread, but the original source of infection was not found.

An outbreak occurred among members of a family who had made a motor trip outside the country. During the 2-week trip several members of the family developed diarrhea, and except for one, later had typhoid fever. The source of infection could not be determined. Another occurred in a trailer camp in which environmental conditions were considered to be poor.

Salmonellosis

The outbreaks in which *Salmonella* organisms other than *Salmonella typhosa* were found to be the etiological agent were fewer in number in 1953 than in 1952. None was reported in which eggs were definitely proved to be the source of infection. In the large number reported in 1952, many cases of *S. montevideo* infection in infants were attributed to a dried egg yolk used in the diet.

The following species of *Salmonella* were isolated either from patients, food handlers, or specimens of food during the investigation of outbreaks of salmonellosis: *S. typhimurium* in 5 instances; *S. newport* in 3; *S. javiana* and *S. paratyphoid B* in 2 each; and 1 each of *S. oranienburg*, *S. muenchen*, *S. derby*, *S. california enteritidis*, *S. schottmulleri*, *S. choleraesuis*, *S. montevideo*, *S. chester*, and *S. saint paul*. In 2 outbreaks, 2 different types of organisms were found.

In one-third (*6*) of the outbreaks, chicken or turkey was found to be the vehicle of infection. Considering the frequency with which these fowl are found with *Salmonella* infections, this cannot be considered an unusual finding.

Two of the outbreaks occurred in hospitals, and one was in an institution housing patients with mental diseases. In one of the hospital outbreaks the source and vehicle of infection was not proved, but an improperly sterilized respirator was considered to be a possible means of transmitting infection from sick to well infants. In an outbreak involving a restaurant, cooked turkey was sliced on a dirty meat block used to eviscerate the fowl. In a school, rat and mice infestation were found where left-over cooked peas were stored before re-serving.

Shigellosis

A total of 23 outbreaks of shigellosis was reported in 1953. Four of these occurred in mental or similar types of institutions, 4 in camps and resort areas, 3 in public schools, 2 in college groups, 2 on Indian reservations, and 1 each in a nursery and at a wedding reception. Person-to-person transmission of infection was regarded as the mode of spread in 10 of the outbreaks. Food was the vehicle of infection in 6 instances and water, in 3.

In one outbreak, flies, which had access to numerous privies, were considered as a possible means of transmission. The mode of transmission was not stated or was unknown in the remainder.

Sonne types of organisms were most commonly found in the investigations of the outbreaks. They were isolated in 10 instances. Seven outbreaks were due to Flexner types of organisms and to miscellaneous types in the remainder.

Staphylococcal Food Poisoning

More outbreaks of staphylococcal food poisoning were reported in 1953 than in the previous year. The number of instances in which custard or cream-filled pastries, salads, ham and other meat products, and other foods commonly associated with such outbreaks were implicated did not change. The number of times that food susceptible of contamination was prepared by persons having infections on their hands or other exposed parts of the body was not materially different from previous years. The contributing factors, such as inadequate, or lack of, refrigeration and poor food-handling practices, were also as frequent as ever.

Many of the outbreaks listed as staphylococcal food poisoning occurred in public and private schools. Poor food-handling practices,

infected fingers of food handlers, or lack of refrigeration was noted in the epidemiological investigation in several of these.

Some unusual findings discovered on investigation of outbreaks included: the eating of meat sandwiches dispensed in a vending machine which had no refrigeration; infected blisters on the hands of a person preparing potato salad on a military post; and an outbreak following ingestion of cracked boiled eggs used in an Easter egg hunt.

Botulism

Ten cases with 4 deaths of botulism were reported during 1953 from 5 different States. A variety of home-canned foods were found to be vehicles of infection, including head cheese, canned corn, beets, asparagus, string beans, huckleberry juice, and lobster tails. In only two instances was the type of organism given. One case each of types A and B were reported from California.

Chemicals and Other Noxious Agents

Four outbreaks of food poisoning in which chemical contamination of food substances was demonstrated were reported in 1953. In one group of four cases, thallium was presumably introduced into chicken soup accidentally and eaten by employees of a restaurant. Botulism was first suspected, but when the affected persons began to lose their hair, the true etiological agent was shown. One of the 4 cases died and thallium was found in the viscera on autopsy.

A group of gastroenteritis cases, which followed the ingestion of imitation grape jelly, was caused by a fluoride, probably magnesium silicofluoride, accidentally introduced when the jelly was processed.

An orange drink and a meat dish, which had been allowed to stand in cadmium plated food containers, were found to contain large amounts of cadmium following an outbreak of gastroenteritis. The orange drink contained 650 p.p.m. and the meat 320 p.p.m. of cadmium. Grape punch stored overnight in a galvanized container caused illness in patrons of a school lunchroom.

Foodborne and waterborne disease outbreaks by vehicle of infection, reported in 1953

Area	Water		Milk and milk products		Other foods	
	Outbreaks	Cases	Outbreaks	Cases	Outbreaks	Cases
United States	11	719	4	97	194	9,914
New England:						
Maine	----	----	----	----	1	23
New Hampshire	----	----	----	----	----	----
Vermont	----	----	----	----	1	25
Massachusetts	1	4	1	18	14	476
Rhode Island	----	----	----	----	1	10
Connecticut	----	----	----	----	4	225
Middle Atlantic:						
New York	1	19	----	----	29	2,064
New Jersey	----	----	----	----	2	258
Pennsylvania	----	----	----	----	2	14
East North Central:						
Ohio	1	9	----	----	2	706
Indiana	1	2	----	----	11	233
Illinois	3	140	1	59	8	186
Wisconsin	----	----	----	----	----	----
West North Central:						
Minnesota	----	----	----	----	3	169
Iowa	----	----	----	----	3	38
Missouri	----	----	----	----	2	36
North Dakota	----	----	----	----	1	100
Kansas	----	----	----	----	2	440
South Atlantic:						
Maryland	----	----	----	----	1	10
Virginia	----	----	----	----	1	7
West Virginia	----	----	----	----	1	6
North Carolina	----	----	----	----	3	374
South Carolina	----	----	----	----	1	75
Georgia	1	44	----	----	2	488
Florida	----	----	----	----	2	12
East South Central:						
Kentucky	1	13	----	----	7	510
Tennessee	----	----	----	----	3	379
Alabama	1	450	----	----	3	915
Mississippi	----	----	----	----	----	----
West South Central:						
Arkansas	----	----	----	----	2	32
Louisiana	----	----	----	----	3	115
Oklahoma	----	----	----	----	2	33
Texas	----	----	1	11	2	55
Mountain:						
Idaho	----	----	----	----	2	41
Wyoming	----	----	----	----	1	20
Colorado	----	----	----	----	2	45
Utah	----	----	----	----	1	7
Pacific:						
Washington	----	----	----	----	6	209
Oregon	1	38	----	----	10	135
California	----	----	1	9	52	1,439
Hawaii	----	----	----	----	1	4

See note on facing page.

Foodborne, waterborne, and other disease outbreaks, by type of infection, reported in 1953

Area	Typhoid fever		Salmonellosis		Shigellosis		Trichinosis		Botulism		Staphylococcal food poisoning		Gastroenteritis, miscellaneous and unknown type		Infectious hepatitis	
	Outbreaks	Cases	Outbreaks	Cases	Outbreaks	Cases	Outbreaks	Cases	Outbreaks	Cases	Outbreaks	Cases	Outbreaks	Cases	Outbreaks	Cases
United States	12	75	21	533	23	2,230	13	134	7	10	81	4,045	92	4,832	28	1,578
New England:																
Maine			1	11	4	49					1	23				
New Hampshire															1	23
Vermont											1	25			1	9
Massachusetts	1	10									8	225	7	263		
Rhode Island											1	10				
Connecticut	1	5	2	187									1	33		
Middle Atlantic:																
New York	1	4	1	37	2	157					5	251	29	2,101	1	22
New Jersey											2	258				
Pennsylvania							1	10					1	4	8	895
East North Central:																
Ohio	1	9					1	6			1	700				
Indiana	4	19	3	21							6	118	5	123	1	106
Illinois			1	33	2	66	1	13	2	3	4	155	4	155	1	8
Wisconsin					1	6							1	35		
West North Central:																
Minnesota					1	12	1	10			1	100	1	59	4	127
Iowa			1	30									2	8		
Missouri			1	6							1	30				
North Dakota											1	100				
Kansas					1	190					1	250				
South Atlantic:																
Maryland					1	140					1	10			2	97
Virginia	1	4	1	14							1	7				
West Virginia											1	6				
North Carolina					1	300			1	1	1	73			1	47
South Carolina											1	75				
Georgia					1	44							2	488		
Florida													2	12		
East South Central:																
Kentucky	1	13									3	25	4	485		
Tennessee											1	69	3	312		
Alabama					2	915					2	450				
Mississippi															1	25
West South Central:																
Arkansas			1	11							2	32			2	27
Louisiana			1	4							2	111				
Oklahoma			1	8							1	25				
Texas			2	50									1	16		
Mountain:																
Idaho											1	6	1	35		
Wyoming													1	20		
Colorado									1	3			1	42	1	49
Utah	1	7													1	60
Pacific:																
Washington					3	134	1	4	1	1	3	36	1	168		
Oregon			2	30	2	63	2	77			6	49	2	26		
California	1	4	3	91	2	154	6	14	2	2	22	826	22	443	3	83
Hawaii													1	4		

NOTE: Michigan, South Dakota, Nebraska, Delaware, District of Columbia, Montana, New Mexico, Arizona, and Nevada reported no foodborne, waterborne, or other disease outbreaks.

Illness from poisonous substances natural to the foods was reported from two different areas. In one instance tree tobacco (*Nicotiana glanca*) was mistaken for swiss chard, and in the other poisonous fish caused illness.

Gastroenteritis With Unknown Etiology

In 73 outbreaks either the etiological agent was not identified or the available information was of such nature that classifying the outbreaks as to type was impossible. In a large proportion of instances food was not available for laboratory examination or the laboratory tests gave inconclusive answers as to etiology.

In this group were 11 outbreaks of gastroenteritis in schools and institutions in which epidemiological investigation indicated that Government surplus stocks of frozen turkey were responsible for illness. A total of 1,883 persons was reported as having gastroenteritis following the ingestion of turkey from this source.

An additional 11 outbreaks occurred in which either turkey or chicken meat was the vehicle of infection of unknown etiology.

Trichinosis

The marked increase in reports of investigations of trichinosis cases in 1953 compared with 1952 is probably due to more complete reporting, and the increase in numbers is partially due to one large outbreak of 73 cases. Only 5 outbreaks with 40 cases were reported in 1952, in contrast to 13 outbreaks with 134 cases in 1953. The 134 cases represent slightly more than a third of the total cases reported in weekly telegraphic reports by States. Reports of epidemiological investigations revealed that one form of meat—pork—was involved in all but one outbreak. In one, bologna was considered to be the vehicle of infection because this product had been ground in the same grinder that had been used to grind fresh pork. In the one large outbreak of 73 cases, which occurred in a large institution, the source of infection was considered to be the meat from garbage-fed hogs raised on the institution's grounds. In three instances the organism was recovered from specimens of meat submitted for laboratory examination.

Streptococcal Sore Throat

Only four outbreaks of streptococcal disease were reported, one of which was foodborne. The latter occurred in a hospital having a normal population of 750. An egg salad was incriminated as the vehicle of infection, but no specimens were available for laboratory examination. The outbreak was explosive in character and symptoms consisted of chills, fever, tonsillitis with exudate, and cervical adenitis.

In another outbreak of streptococcal disease, which was reported on an Indian reservation, acute glomerolanephritis was a frequent sequella. About 38 cases had signs of scarlet fever and a few had a pyoderma, the lesions of which contained streptococci. A total of 56 cases with 1 death of acute nephritis was observed on the reservation.

An epidemic, which occurred in a dormitory of a college, was explosive in type but was attributed to crowding in the living quarters. The remaining outbreak occurred in a school and was considered to be contact infection.

Infectious Hepatitis

While the number of outbreaks of infectious hepatitis reported in 1953 scarcely exceeded the number in 1952, cases reported weekly by States increased nearly 100 percent. It is reasonable to assume that many outbreaks were not reported during the year, since sudden increases in reported cases were noted from time to time in weekly reports from many States.

In 11 of the 28 outbreaks reported, schools or institutions for children were the principal populations involved. Two occurred in housing developments. In one development unsanitary conditions and poor personal hygiene were considered to contribute to the spread of infection. In the other, cross connections in the water supply system were thought to be a contributing factor.

In the outbreaks reported among school populations, spread by contact in the school bus was considered likely in one instance, contamination of the water supply was found in another, and a possible cross connection of the water supply with a toilet in one. In all of these school outbreaks, the occurrence of secondary cases in the homes of the children was common.

Infectious hepatitis was first reported by States on a current weekly basis beginning in 1952. The marked increase in the number of cases reported in 1953 (more than 33,000) places this disease on the list of diseases of major public health importance. While the death rate has generally been low in past years, the disease is important because of a protracted convalescent period, especially in adults, and the possibility of damage to the liver for even longer periods of time. No specific type of treatment has been found, but prevention by use of gamma globulin has been effective. This control measure was reported as being used extensively for protection of family and school contacts.

Although the mode of spread of most outbreaks reported is considered to be person-to-person contact, the possibility of water as a vehicle of infection was seriously considered in at least four instances.

Miscellaneous Types of Outbreaks

Three outbreaks of diarrhea of the newborn in hospital nurseries were reported. In one, many cases of respiratory disease occurred in patients, physicians, and nurses immediately preceding the outbreak of diarrhea in the infants. In another hospital, one of the mothers had fever and loose stools on admission, which was about 8 days prior to illness in the infants. The third outbreak was explosive in type and followed cases of diarrhea in the obstetrical staff and nurses' aides. Inadequate washing facilities were also found in this hospital. In another outbreak of disease fatal to three infants, loose stools was a symptom but the diagnosis of interstitial pneumonia was made at autopsy. A fatal case in a mother with acute hemorrhagic interstitial pneumonia immediately preceded the four cases in premature infants.

An unusually high incidence of amebiasis was reported among employees of a manufacturing plant. Some food handlers in the plant cafeteria and nearby restaurant were found to be carriers, but conclusive evidence of the real source of infection was not reported. Two other small groups of cases of amebiasis were also reported in the same State.

While no unusual incidence of infectious encephalitis was reported in 1953, a surveillance program of investigation in California indicated that of 349 cases 14 were shown on laboratory examination to be the western equine type of infection and 22 the St. Louis type; 153 were classified as mumps encephalitis; 31 as post measles encephalitis; 10 were miscellaneous types of post-infectious encephalitis; and in 119 the type was not determined. Late in 1952, the State of Oregon experienced a sharp increase in encephalitis cases. Some were shown to be mumps encephalitis; others proved to be lymphocytic choreomeningitis, and the etiology of others was undetermined.

A report of heavy infestation, 38 percent, with *Strongyloides stercoralis* was reported in inmates of three cottages of a private institution in Illinois. The first case recognized was a child admitted from another State, but investigation also revealed the fact that two children had been admitted earlier from an area where this disease is common.

Diseases Transmitted From Animals

Rabies

Epidemiological information on 8 cases of human rabies was received during the year. In 4, antirabies vaccine was given, and in some instances it was started on the day the persons were bitten. One fatal case of encephalitis after rabies vaccination was reported. In this instance, a child was playing with a dog that subsequently was killed. In spite of the fact that the child was not bitten and the dog's brain was not examined in a laboratory, a physician recommended antirabies vaccine for the child. Symptoms of encephalitis developed on the ninth day after vaccine was started, and the patient died 4 days later.

During the year, the existence of rabies infection in bats was demonstrated in the States of Florida and Pennsylvania. One person, bitten by a bat in which rabies virus was isolated, was given antirabies vaccine, but did not develop any symptoms of the disease.

Psittacosis

Psittacosis was not reported by States in their weekly telegraphic reports of notifiable diseases, but epidemiological information on a consider-

able number was received following investigation of cases. A total of 80 such reports was received. California reported 15 cases; Georgia 9; Texas and Iowa 8 each; New York 7; and 13 other States reported 1 to 6 cases each. Infection was traced to psittacine birds in 66 of the 80 cases. The 8 cases in Texas occurred in employees of a poultry processing plant where 61 cases had occurred in 1952. The only exposure in one case was to pigeons; in another to canaries. In 4 cases the source of infection was unknown.

Twenty-three of the cases were exposed to household pets, and 17 had exposure to parakeets in aviaries and pet shops. Only 2 cases occurred in persons under 20 years of age. One of these was a 5-month-old infant who died of the infection, the only fatality reported. The other was a 15-year-old boy.

Plague and Anthrax

While no cases of human plague were reported in 1953, specimens of rodents and fleas collected proved positive for plague infection. Four such positive specimens were obtained from the State of Washington; 6 from New Mexico; 2 from California; and 7 from Hawaii.

The incidence of anthrax in domestic animals was reported to be much lower in 1953. No cases in humans were reported in which infection was traced to contact with farm animals. The 33 cases reported in weekly telegraphic reports were of industrial origin.

REFERENCE

(1) Cockburn, W. C., and Simpson, E.: Food poisoning in England and Wales, 1951 and 1952. Month. Bull. Min. Health Gt. Britain 13: 12–24 (January 1954).

Oil of Wintergreen Not Harmless

Drug products containing more than 5 percent methyl salicylate (oil of wintergreen) will be considered misbranded unless their labels carry both a warning of danger if used contrary to directions and an admonition to keep the product out of reach of children, according to the Food and Drug Administration of the Department of Health, Education, and Welfare.

The Food and Drug Administration pointed out that as little as one teaspoonful of oil taken internally can cause death. Approximately 15 deaths a year, mostly of young children, occur from accidental poisoning by preparations containing oil of wintergreen.

To minimize accidental poisoning by preparations containing oil of wintergreen, parents are warned to keep children away from liniments and other medicaments labeled for external application for relief of minor muscular pain.

the Hospital *the* Medical Center *the* Community

By CHESTER S. KEEFER, M.D.

THE HOSPITAL, the medical center, and the community form a major segment of the health component. The hospital is today, as it always has been, the physical symbol of medical science and technology. Its value to humanity can be no greater than the collective brains and skills of the men and women who work within its walls.

Prior to the turn of the century hospitals were primarily for protection of society, rather than for the welfare of the patient. Those with contagious illness, mental disease, and the poor and homeless were the major "beneficiaries" of the hospital care of that day. Childbirth was immeasurably safer in the home than in the hospital. The same was true in large measure of most types of illness.

Modern medicine, and with it modern hospital care, is a product of the 20th century. With each advance in medical science, the public demand for hospital care increased. Gradually the hospital came to be looked upon as a place for recovery—for restoration of health rather than a point of no return. With the ever-increasing demand for hospital services, the construction of new hospitals spread rapidly during the first 30 years of the present century. The first census of hospitals, taken by the United States Bureau of Education in 1873, reported only 178 hospitals of all types with some 34,000 beds. The next reliable census of hospitals, that of the American Medical Association published 36 years later (1909) in its American Medical Directory of Hospitals, listed 4,359 hospitals with 421,000 beds—a phenomenal increase for the period.

World War I caused only a temporary slackening in the rate of hospital expansion. The decade following saw a greater expansion in hospital building than in any previous 10-year period, and by 1918 we had reached a high water mark of 6,852 hospitals with nearly 900,000 beds.

Although the number of hospitals declined by 686 during the depression years, it is significant that the number of hospital beds in operation increased steadily from year to year. This was indicative of a trend toward centralization and urbanization of hospital facilities and medical

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personnel. In 1938, more than one-third of the 3,070 counties in the country had no hospital. Even then the absence of a hospital was almost synonymous with the lack of a resident physician. Rural communities had few doctors. Graduates of the modern medical school could and would practice their profession only where the modern tools afforded by the hospital were at their disposal.

At the outbreak of World War II the leaders in both the medical and hospital fields were beginning to realize that medical science was progressing at a far greater pace than was its means of distribution. New discoveries in medicine were taking too long to reach the people. Changing medical and social patterns required not only new tools but especially new methods.

Commission on Hospital Care

Early in 1942, the American Hospital Association Council on Administrative Practice called a postwar planning conference and suggested to it a hospital survey. In October 1942, the conference recommended that a commission on hospital care make a comprehensive study of hospitals, particularly of the part hospitals should play in the future life of our people. Private foundations provided financial support for a 2-year study, and by 1944, 22 nationally prominent members had been selected.

The report of the Commission on Hospital Care, published in 1946, revealed points of special significance. First, there was a very large need for general, mental, tuberculosis, and chronic disease hospital beds because of increasing population and obsolescence of existing hospitals. The lack of facilities in general was further compounded by inequitable distribution.

The second significant finding of the commission was that general hospitals in particular had developed in an atmosphere of intellectual isolationism. Too much emphasis was being placed on the treatment of acute illness, and not enough attention was being given to the broader responsibilities of preventive medicine, mental health, and chronic illness. Many of the problems pointed out by the Commission on Hospital Care in 1946 are still with us today in even greater proportions. These problems can and must be solved if we, as physicians, are to meet our obligations to the people of the country.

The Hospital in the Community

Most of the medical care problems are related to the large one: how to get the best modern medical care to all the people of the Nation at a cost they can afford to pay. This includes modern facilities tailored to the needs of each community, proper distribution of well-trained people in the health professions, and a way of bringing the cost within the means of every family. Progress is being made in seeking solutions to these problems of which we are all aware.

In discussing the part the hospital must play in bringing modern medical care to the community, I shall use the term "hospital" in its broadest sense: a place for the restoration of health, for the prevention of illness, and for the training of health workers. In order to fulfill this mission the hospital must be planned, equipped, staffed, and located with an eye to what tomorrow will bring in the way of new medical problems and constantly increasing demands of medical science. The hospital must be prepared to provide the physician and the community with facilities which were not even dreamed of a few years ago—such as radioactive isotopes, blood vessel banks for vascular surgery, blood banks, cornea banks for the restoration of sight, bone banks, the artificial kidney, and the mechanical heart, to mention but a few.

The hospital must be prepared to deal with the increasing problem of chronic illness and the degenerative diseases of an aging population. The acute diseases of yesterday are rapidly being replaced by the chronic diseases, the number one medical problem today. Now fewer people are dying in childhood and early adult life, and more people live to reach their sixties and seventies. Aging brings with it different medical, hospital, and social problems.

Only the large medical center can hope to meet all these needs. Many of the skills required are so rare and the equipment so expensive that they are to be found only in the large medical centers. The ability to supply com-

plete services lies in an integrated system of community hospitals, specialized hospitals, nursing homes, rehabilitation centers, and home-care programs operating as one team around the medical center.

Regional Hospital System

The concept of an integrated network of hospitals built around the medical center is not new, but progress towards this goal has been discouragingly slow. As early as 1931 a Boston physician, noting the isolation of the doctors in rural Maine, evolved the idea of a regional hospital system, which a private foundation, the Bingham Associates, financed and administered. The physical plant contained three elements: a diagnostic hospital, which is a part of the New England Medical Center; two so-called intermediate hospitals of approximately 200 beds each, strategically located in Maine; and a large number of rural hospitals of from 20 to 100 beds.

The program involved a four-part plan: (*a*) to upgrade the rural hospitals by providing laboratory facilities and personnel; (*b*) diagnostic aid and consultation on treatment furnished by the medical center or the intermediate hospitals as necessary; (*c*) hospital extension service in which clinical lecturers from the medical center make regular visits to the intermediate hospitals and hold clinics and demonstrations to which the staffs of the rural hospitals are invited; (*d*) postgraduate educational opportunities for rural physicians, nurses, and technicians at the medical center.

In these rural areas, this program has contributed immeasurably to the quality of medical and hospital care and has helped to make rural medical practice a more rewarding experience.

A similar experiment is now going on in New York State, with the University of Rochester serving as the medical center. About 30 rural hospitals have banded together to form the Rochester Regional Hospital Council. In addition to programs similar to those of the Bingham Associates, this organization provides joint buying services and other administrative assistance.

The Medical College of Virginia, New York University Medical School, University of Michigan, and several others are trying similar plans on a small scale.

Distribution of Doctors

High quality medical and hospital care can be made available to everyone through adequate facilities and competent physicians who are contented in their environment. Essential to satisfactory working conditions for the young physician are these four conditions: modern hospital facilities, an adequate income, a satisfactory social environment, and a ready source of intellectual refreshment. A few years ago almost none of these conditions was to be found in rural areas, but now they are to be found with increasing frequency.

The migration of young physicians to the cities is gradually being reversed. Almost every rural hospital built in recent years has attracted new physicians to its community. In these rural communities where new hospitals have been built all the elements of a satisfactory practice are at hand save one—ready access to the help and inspiration that can come only from the medical center. I believe the establishment of those channels is one of the big challenges that face the medical profession in the immediate future.

The Hill-Burton Act

The Hill-Burton Hospital Survey and Construction Act in 1946 envisaged the creation of an integrated regional hospital system. The act provided that the States were to make a careful survey of their hospital needs and prepare a planned construction program. State plans were prepared to provide for hospitals in "base (medical centers), intermediate, and rural areas." The type of area was determined by the population density, existing facilities, and other factors, and the needs of each area determined individually. In the intervening 8 years the States have faithfully built around the framework of an integrated hospital system. The more than 2,200 hospital and health center projects approved will provide 426 health centers and more than 106,000 hospital beds. On the average, 2 dollars of State and

local money have been used for every Federal dollar contributed.

The heavy emphasis in this program has been on the general hospital in rural areas where the need was the greatest. But substantial additions have been made to teaching hospitals in intermediate and medical center areas, and a smaller number of beds have been added in the tuberculosis, mental, and chronic disease categories.

The Hospital Survey and Construction Program has made an invaluable contribution to the hospital assets of the Nation and will continue to do so. Considerable progress has been made in meeting the great need for rural hospitals which had accumulated during the past 20 years. As the rural needs become more nearly satisfied, increasing emphasis may be placed on teaching hospitals and medical centers. It is realized that the flow of trained personnel must be maintained and increased if the diversified demands of adequate health care are to be met.

Special Facility Needs

Problems of an aging population are becoming more and more apparent. While only 3 percent of the population in 1900 were over 65 years of age, the percentage rose to 12 percent by 1950, and the population forecasters predict that by 1975 it will rise to 16 percent—or a total of nearly 29 million people in that age bracket.

With increasing age there comes an increasing need for institutional care. People over 65 years of age are now using twice the number of hospital days per capita as those under 65 because of the rapidly increasing incidence of chronic diseases which occur with advancing years. A spot check of almost any general hospital on any given day will reveal that a considerable proportion of the patient load will consist of patients with chronic illness that could be cared for as well or better in chronic disease facilities, which cost less to build and much less to operate.

Numerous surveys have shown that the percentage of such cases in general hospitals runs from 20 percent upward. With general hospital beds costing on the average $16,000 to build and $18 per day to operate, the care of chronic illness in general hospitals is becoming an intolerable burden which must and can be corrected.

The situation in mental hospitals is very much the same. Nearly one-half of all the hospital beds in the country are in mental hospitals, which are notoriously overcrowded. Here again a substantial part of the patient load is made up of persons with senile psychoses. Many of them need not be there except for the fact that there is nowhere else for them to go.

The answer to these problems seems fairly obvious—more chronic disease facilities and nursing homes which can be built and operated for a fraction of what it costs to build and operate acute general and mental hospitals. We need these facilities readily available to every community and under the medical supervision of the staffs of our community general hospitals.

But mere health maintenance for the aged and chronically ill and the physically handicapped is not enough. They are still people as well as patients, and they need physical and mental readjustment and vocational training. Rehabilitation is a natural concomitant to any plan of treatment of the aged and chronically ill, and communities will need rehabilitation facilities.

Diagnostic and Treatment Centers

As the President has observed, many illnesses can be cared for outside of any institution: "For such illnesses a far less costly approach to good medical care than hospitalization would be to provide diagnostic and treatment facilities for the ambulatory patient. The provision of such facilities, particularly in rural areas and small isolated communities, will attract physicians to the sparsely settled sections where they are urgently needed."

Traditionally, the care of the ambulatory patient in this country has been for the most part the responsibility of the private physician in his private office. Other facilities for the care of this type of patient have been generally confined to the outpatient departments of our large general hospitals. The use of outpatient departments has been largely limited to the indigent and the medically indigent. Fees have generally been nominal.

The rapid growth of specialization has made the traditional methods of handling ambulatory patients increasingly inefficient and time-consuming for both physician and patient. To obtain a comprehensive physical examination and diagnosis, a patient may need to visit a number of different specialists in different places. This has resulted in an increasing number of patients being hospitalized for diagnostic purposes alone. Since hospital insurance plans do not, as a rule, cover hospitalization for diagnostic purposes, this type of practice has been far from satisfactory. One remedy may be group practice—or the voluntary organization of groups of family doctors and specialists who are prepared to provide comprehensive medical care outside of hospitals just as they have been doing inside hospitals for some years.

The concept of group practice has grown steadily, if slowly, over the years. In this country there are about 500 such groups of one type or another. Some do diagnosis only; some do both diagnosis and treatment; some operate their own prepaid insurance plans; and some serve local insurance plans exclusively. Their objective is to practice the best medicine and to provide general and special services in the most effective manner.

The family doctor is the central figure in medical practice, but the need for the specialist is also recognized. Working together as a group or team with accessible facilities is the key to improving medical service for the people. Communities will need diagnostic and treatment centers to give the people better medical care on an ambulatory basis and to ease the demand for institutional care.

Community Hospital Responsibilities

As I have tried to point out, the health care of the American people is very complex. Within our memory, we have seen many man-killing diseases almost fade from the picture only to be replaced by other medical problems even more difficult of solution.

Although the community hospital was once self-contained and self-sufficient, it is no longer so, but it is firmly fixed in the American pattern of life and will remain so.

More and more the community hospital must look to the medical center for its personnel, for its diagnostic and treatment aids, and for the advance training in professional skills of its staff. Its services must be extended through special facilities to the care of the aged and the chronically ill. Facilities for the diagnosis and care of the ambulatory sick must be utilized to ease the demands on its highly technical and expensive inpatient services.

Health Insurance

The teamwork approach in medical care is expensive. Everyone is asking the question: How can adequate—and the necessary modern—medical care be provided at a cost that people can afford to pay? One of the ways the American people are attempting to answer this question is by developing voluntary prepaid health insurance plans. These voluntary plans have grown enormously in the past 15 or 20 years. Today about 92 million persons are covered by some kind of hospitalization insurance.

The families of this country have embraced the principle of voluntary health insurance because many realize that the costs of medical care in any one year are unpredictable and are nonbudgetable items of expense.

Recent surveys indicate that the median cost of medical care for our 50 million families is 4.1 percent of family income. But the range varies from no expenditure for medical care in a year to more than 100 percent of family income. These wide variations and unpredictable costs are among the reasons for the growth of voluntary health insurance—families want to protect themselves against such risks by spreading the costs on a prepaid insurance basis. Such plans are successful and reasonable in price only when large groups are enrolled. It is important, therefore, that the largest number of eligible people be enrolled and that the benefits be liberalized so that the maximum amount of protection may be available.

Large segments of our population find it difficult to enroll in any type of voluntary plan, for instance, the aged, the self-employed, farmers, and rural dwellers. We need to increase the opportunities for coverage of these people and to extend the scope of insurance benefits.

The many current problems in the field of medical care must be attacked vigorously and with courage. Plans for their solution must be soundly conceived. Joint thinking and joint action are required of the health professions, the lay public, the insurance carriers, and health service organizations if the goals are to be reached.

The problems of medical care are the concern of every citizen. President Eisenhower has stated this well: "No nation and no administration can ever afford to be complacent about the health of its citizens. While continuing to reject government regimentation of medicine, we shall with vigor and imagination continuously search out by appropriate means, recommend, and put into effect new methods of achieving better health for all of our people. We shall not relax in the struggle against disease. The health of our people is the very essence of our vitality, our strength, and our progress as a Nation."

Visual Aids on Infant Feeding

A series of color filmstrips and silent color movies on infant feeding has been developed by the nutrition and visual education sections of the Michigan Department of Health. Intended to supplement group teaching of mothers attending well-child conferences, these aids show a mother demonstrating in her own kitchen how she prepares and feeds new foods to her child. They also illustrate information contained in a similar series of pamphlets.

There are five different filmstrips and movies in the series. Each strip and movie is devoted to a different type of food: citrus juices, cereals, fruits and vegetables, meats, and eggs. Simple directions and suggestions for introducing new foods into the infant's diet are included.

A wide variety of uses for the film series has already been found in the Michigan well-child conferences. Nurses and nutritionists are using these visual aids in their interviews with mothers. The strips or movies are also being used to entertain mothers and restless children during the waiting period. Selected volunteers are permitted to show the films and lead the discussions which follow.

The Care of the Long-Term Patient

National Conference

TO STUDY and make recommendations concerning health and other services needed by patients with chronic illness requiring continuous or prolonged care, the National Conference on the Care of the Long-Term Patient was held March 18–20, 1954, in Chicago, Ill. It was the second national conference to be held under the auspices of the Commission on Chronic Illness.

Scope and Purposes

Indicating the scope and purposes of this conference are the following excerpts from the keynote address by Leonard W. Mayo, chairman of the Commission on Chronic Illness and director of the Association for the Aid of Crippled Children:

"Though this has been designated as a conference on care, and though our mandate is to spell out the health and other services needed by those who are already ill, our basic concern is with prevention and rehabilitation. We focus on the problems of care because present services must be improved, extended, and effectively coordinated if more of the disabled are to be restored to productive living, the recurrence of long-term illness prevented, and the road to further research illuminated.

"For the purposes of this conference and the work of the commission, chronic illness has been defined as comprising 'all impairments or deviations from normal which have one or more of the following characteristics: are permanent; leave residual disability; are caused by nonreversible pathological alteration; require special training of the patient for rehabilitation; may be expected to require a long period of supervision, observation, or care.' The best estimates indicate that of the 5.3 million people in the United States who have a chronic disease or illness requiring long-term care, 2.1 million are 65 years old or over; 1.8 million are between 45 and 65 years of age; and 1.4 million are under 45.

"The more than 20 million people in the United States who have minor or nondisabling chronic diseases or impairments for which short-term care is generally available in most communities are excluded from conference consideration. Many of the recommendations that will be made by the conference concerning philosophy, methods of care, and coordination of facilities will nevertheless be applicable to this group in a general sense.

"The mandate given to the National Conference on Care of the Long-Term Patient constitutes a tall order. The official documents of the conference express it under five headings:

"1. Identify the requirements of the long-term patient in the various states and severity of his illness.

"2. Examine existing methods of providing care, explore new methods, and enunciate principles which should govern needed changes.

"3. Suggest patterns for desirable relationships between services, facilities, and programs.

"4. Recommend various ways to improve the financing of long-term care.

"5. Establish direction and suggest next steps for local, State, and national programs for the care of the long-term patient."

Organization

Reviewing the events which led up to this conference, Dean W. Roberts, M.D., director of the Commission on Chronic Illness, noted that the commission's 1951 conference on the preventive aspects of chronic disease dealt in detail with one aspect of the total problem. "The specifics of a comprehensive program for the care of the chronically ill are yet to be recommended," he stated. "In a sense, the 1954 conference on care of the long-term patient complements the 1951 conference on prevention."

Dr. Roberts described the organization of the conference, which he said has been different from previous ones, as follows:

"The membership of the Commission on Chronic Illness does not include the wide range of professional skills, experience, and knowledge necessary to properly think through the complex problem of care of the chronically ill. Therefore, this conference was devised to get technical help from experienced people from the entire country. Most of us have experienced the frustrations of trying to penetrate the interlocking problems of medicine, sociology, physical facilities, community organization, and finance. We needed help from many fields of endeavor . . .

"Twenty-eight study groups were organized to study limited facets of the problem, each of which included representation from several different fields. Among these were medicine, nursing, social work, occupational therapy, physical therapy, hospital administration, public health, public welfare, research, architecture, industry, and consumer groups. The various agencies through which care is financed were also represented, and most of the study groups included a member of the commission.

"The 28 study groups were organized into 5 conference committees representing the major areas of concern: (*a*) the patient at home, (*b*) the patient in an institution, (*c*) integration of facilities and services, (*d*) research, and (*e*) financing. Each study group was centered in a city which had had successful experience in the subject under study and where a nucleus of experienced persons were available. . . . In the past 10 months these small, specialized study groups have held an aggregate of over 60 meetings—some lasting several days—in 12 cities.

"In reality the conference began in the last week of May 1953 when the first nine study groups held their initial meetings in New York, Chicago, Boston, and Cleveland. The aim in the next few days is to digest the findings of the study groups and synthesize from them a series of principles and recommendations that will point the way for community action in the years immediately ahead. Many communities . . . are seeking the kind of guidance that can come from these deliberations."

Summary reports and recommendations of the five conference committees were published in the May 1954 issue of the *Chronic Illness News Letter*. Below are condensations of the speeches made by representatives of the organizations which sponsored the conference.

American Hospital Association

PHR brief

The American Hospital Association fully realizes that no type of institutional health care can be static. It must be adapted to changing needs which result from progress in medical science, extended programs in public health, and expanded emphasis on public welfare. It must contribute to the total health of all the people, and, most important, institutional services must reflect a forward look which anticipates new and important health service requirements.

The considered opinion of thoughtful leadership within the association is that the construction and operation of specially designed units of general hospitals for the care of chronically ill patients should be encouraged. We believe also that the formally organized, intricate services found in hospitals should be coordinated in an organic working relationship with the less com-

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Presented for Edwin L. Crosby, M.D., executive director of the American Hospital Association, by Maurice Norby, deputy executive director.

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plex service, or services, found in those separate institutions which are designed to serve patients having types of chronic illnesses not continuously requiring specialized services and equipment. We recognize not only that the provision of adequate care for chronically ill persons involves the establishment of facilities but also that their operation reaches deep down into the individual and public purse.

The realization of our mutual objective will require planning and financing. At present, the association, through two of its councils, is exploring needs in the chronic illness field with a view toward the development of an effective action program. This program, it hopes, will assist the many thousands of people engaged daily in activities designed to accomplish our common objective: better care for all the people.

We recognize our responsibility as an association to extend our efforts to all groups which can profit from our assistance. We are proud to have played a part in the coordination of interest and effort among medical, public health, public welfare, and hospital people through the organization, sponsorship, and support of the Commission on Chronic Illness. The American Hospital Association stands squarely behind the important programed projects of the commission, and it will assume its full measure of responsibility in this important work.

American Medical Association

PHR brief

The Commission on Chronic Illness has been most successful in focusing interest on problems concerned with chronic disease, in creating an atmosphere of cooperation, and in studying and devising methods for meeting the problems concerned with the care of the chronically ill.

By George Lull, M.D., secretary and general manager of the American Medical Association.

The American Medical Association considers three of the commission's activities especially worthwhile. The first is the National Conference on Chronic Disease held in March 1951. At that conference, experts from all fields concerned with chronic disease were gathered together for the first time. The conference proceedings, published by the commission in 1952, are invaluable in their contribution to any ultimate solution of the problems of prevention and detection of chronic disease.

The second activity is the *Chronic Illness News Letter*, published monthly by the commission. Its major contribution is its article in each issue describing the activities of a particular community, a particular movement, or a particular program.

The third activity is the present conference devoted to the care of the long-term patient. The commission has shown its ability to get together a wide range of professional knowledge from all parts of the country and to direct attention toward specific aspects of chronic illness.

The American Medical Association has been an active co-sponsor of the commission. It has, I believe, as great a stake in the success of the commission and of this conference as does any other group here represented. The medical profession is more intimately concerned with detection, screening, and the primary and secondary prevention of chronic illness than any other group, but it must share the responsibility for the care of chronically ill patients with many others in the health field.

While progress is being made in dealing with the preventive aspects of chronic disease, the problem of caring for those who are already ill is one that must continue to command our attention. Too often in the past, people have been prone to wave aside the problem of the chronically ill by saying, "They are a bunch of old people and they will have to be taken care of in an old folks home." Increased longevity has undoubtedly helped to increase the incidence of chronic disease, but it is not confined to aged people. Seventy-five percent of the chronically ill are in the productive years of their lives, under 65 years of age. It is with this group that the best results can be obtained.

A number of the chronic diseases, such as

high blood pressure, arthritis, kidney disease, arteriosclerosis, varicose veins, and chronic bronchitis, do not keep the person from carrying on some of the normal activities of life. Proper medical attention is essential in keeping such people busy with their daily routine, but for most of these people, the amount of medical attention necessary is very small in comparison with the attention they need from other workers in the health field. Let us hope that the physician, the dentist, the nurse, the hospital administrator, the health educator, and the social worker can work effectively together in greatly extending and improving the care of the chronically ill.

American Public Health Association

PHR brief

The American Public Health Association, which represents official and nonofficial public health agencies, is enthusiastic about this conference. Manifestly, chronic disease, or chronic illness, has become a public health problem.

Why do I say it has *become* a public health problem? Well, the sphere of the activity of public health at any given time, of course, is those fields in which the community as a whole wants or needs work done. In times past, the main emphasis was upon infectious diseases. Some of those infectious diseases—tuberculosis and syphilis, for example—are also chronic diseases. Mental illness, long a concern of the community, is also a chronic illness. Thus, chronicity is not new to public health. The particular chronic diseases which are now the major concern, however, are new.

How public health has changed its attitude concerning chronic diseases in response to community needs can be illustrated by the experience in Massachusetts in the 1920's. For 10 years, the Massachusetts Legislature asked in an informal way that the department of health of the Commonwealth do something about cancer, but the department during that period felt that cancer was not properly a concern of public health. Finally, the legislature ordered the department of health to do something about cancer, and no more nonsense. As a result of this order, the State now has a cancer detection reporting and treatment program which is one of the finest in the country. So far as treatment is concerned, the program consists principally of running a State hospital for indigent cancer patients, which is not only a fine institution for medical care, but is also a major research center. The latest development in chronic disease in Massachusetts is the construction of the Lemuel Shattuck Hospital of 500 beds. It will be opened shortly under the direction of the Massachusetts State Department of Health.

The public health department must respond, and it will respond, to the needs with which the community decides it should be concerned.

Public Health Contributions

Public health is much involved today in the field of chronic diseases, as demonstrated, for example, by the fact that 40 percent of the home visits of public health nurses from health departments are for chronic disease patients. The questions of how it is involved, how it should be involved, and how it best can use its particular skills in this field remain to be answered.

It seems to me that public health can offer some contributions which are almost unique. Public health traditionally has had an interest in health, as distinguished from disease, that can result in an emphasis in chronic disease programs on early detection, early diagnosis and treatment, and early rehabilitation. Its broad perspective emphasizes not a particular chronic disease or even a particular group of chronic diseases but, rather, the common denominator of chronic diseases.

If one considers the history of the control of tuberculosis and the skills that have gone

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By Dean Clark, M.D., chairman of the Subcommittee on Medical Care of the American Public Health Association.

into that, one can see very quickly how public health can contribute, and is now contributing, to the control of other chronic diseases. Prevention is one of these skills. Not all chronic diseases, as we know them now, can be prevented, but many measures can be taken toward the prevention of a number of these diseases. The skills of case finding and recording and of mass diagnoses support the early detection of chronic diseases. Skills developed in the areas of institutional care of patients, the supervision of their care at home, and the provision of nursing services and family service can contribute to the management of all chronic diseases. Rehabilitation is an illustration of another skill which can be translated into the field of many chronic diseases. Finally, skills in administration and in the integration of community effort can be applied to all types of chronic disease programs.

The job ahead is how best to put these skills to work. The American Public Health Association greets this conference with enthusiasm and confidence.

American Public Welfare Association

PHR brief

The American Public Welfare Association, one of the founders of the Commission on Chronic Illness, takes pride in this conference as a demonstration of the magnificent work done by the commission. Public welfare workers have long been cognizant of the need for preventing and controlling chronic illness and disability, and for providing good care to the chronically ill.

Chronic illness is no respecter of economic status. Chronic illness has such serious and widespread consequences in family disintegration and loss of earning power that, for both humanitarian and economic reasons, it is clearly the obligation of public welfare to join with other interested groups to seek the means of controlling chronic diseases and improving the condition of long-term patients.

Public welfare agencies encounter a variety of problems caused by chronic illness. As far back as the midthirties, the National Health Survey indicated that the incidence of chronic illness was considerably higher for families on relief than for the population as a whole. The need for public assistance itself frequently arises from illness or its sequelae. In the nationwide study of the aid to dependent children program, sponsored 2 years ago by the American Public Welfare Association, it was found that one-half of the families were dependent because of a parent's illness or death. A major but unknown portion of the recipients of old age assistance is incapable of productive employment because of chronic illness or impairment. By definition, all recipients of aid to the blind and aid to the permanently and totally disabled have long-term disabling conditions.

Public welfare agencies have a major responsibility for helping chronically ill recipients and their families to plan for their care. They often help in finding a nursing home, boarding home, or other institution suited to the patient's needs. The public welfare agency also offers, to supplement such counseling and referral services, the social casework services so many chronically ill persons need. Community responsibilities of some public welfare departments include inspection and licensing of facilities for the long-term patient, and administration of institutions providing long-term care.

Lacunae in Present Provisions

Public welfare departments, as they are confronted with the many problems of planning for care of the long-term patient, wish for better organization of home medical services for these patients; for improved long-term care facilities, public and private, for the patient who cannot be cared for at home; for adequate financing of all the services needed by those chronically ill persons who are dependent on public assistance; and for vocational rehabilitation services that will return to productive

By Loula Dunn, director of the American Public Welfare Association.

work the many disabled persons on the assistance roles.

The complex of interrelated problems involved in caring for the long-term patient makes it essential that we continue to pool experience and resources. There must be joint planning for the training of medical and nursing personnel, for the development of hospital and other institutional facilities for the chronically ill, for organized provision of home care, for agreement as to the functions and relations of Federal, State, and local public agencies, and of voluntary agencies. All must be focused on the patient, his problems and requirements.

Public Health Service

PHR brief

The programs of the Public Health Service related to chronic diseases and long-term illness have changed strikingly in the 5 years since the first meeting of the Commission on Chronic Illness. Two new institutes concerned with research in the causes of long-term illness were established: the National Institute of Arthritis and Metabolic Diseases and the National Institute of Neurological Diseases and Blindness. Last July, the Clinical Center, which is rapidly becoming the focus of research in the chronic diseases and in the clinical aspects of other causes of long-term illness, was opened. And, very recently, the Service's activities for the control of chronic diseases were merged in a Division of Special Health Services to emphasize services rather than specific diseases.

Programs and Facilities

In these 5 years, the Nation has experienced a sharp reduction in the death rates from tuberculosis and syphilis. Intensive work with reported cases of syphilis in each State can keep this one-time major cause of long-term illness suppressed. Tuberculosis experts in the States, in private hospitals, and in the Public Health Service are working toward combined home care and hospitalization programs; toward more efficient treatment; and toward intensive followup which will make the case-finding programs of earlier years yield the best results in tuberculosis control.

Through the National Hospital Survey and Construction Program, the Public Health Service also has been concerned with the planning and construction of facilities needed for long-term patients. This program has aided in the construction of 3,000 beds in chronic disease hospitals, 11,000 beds for mental patients, and 6,000 beds for tuberculosis patients. In addition, Federal grants have aided in the construction of 86,000 general hospital beds, a substantial proportion of which, as you all know, is absorbed by long-term patients.

President Eisenhower has recognized the close relationship between the problems of an aging population and the increasing demand for facilities for the care of long-term patients. He has discussed the need for increasing the Nation's supply of beds in chronic disease hospitals and nursing homes, as well as of diagnostic and treatment centers for ambulatory patients and rehabilitation facilities.

The President also has pointed out that vocational rehabilitation programs must be strengthened to return the disabled to useful, productive lives. His announced goal is to step up the annual number of rehabilitated persons from the present 60,000 to 200,000 during the next 5 years.

Two more important fields in which Federal agencies can be of particular assistance to the organizations and communities planning for care of long-term patients are health statistics and epidemiology. The source book prepared for this conference (Care of the Long-Term Patient, Public Health Service Publication No. 344, Washington, D. C., U. S. Government Printing Office, 1954) is a good example of this unique capacity of Federal agencies. Not only several Public Health Service divisions, but also various parts of the Social Security Administration and the Office of Vocational Rehabilitation, as well as the numerous organizations participating in this conference, have

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By Leonard A. Scheele, M.D., Surgeon General of the Public Health Service.

assisted. For many years, a troublesome handicap to planning and to distributing resources effectively and economically has been the lack of reasonably adequate guides to the size and characteristics of the problem. The source book does not pretend to have all the answers, but it assembles the best available data.

Stake in Conference Objectives

In every phase of its mission, the Public Health Service has a stake in the objectives of this conference. Our research programs are dedicated to the discovery of new and more effective ways of caring for patients with long-term illnesses. Our public health programs are devoted to aiding State and local agencies, both private and public, in the development of community programs that will provide effective services of the types demanded by the particular problems of long-term patients.

When the Commission on Chronic Illness was established, the sponsors confidently expected that a voluntary partnership of the major professional organizations concerned with the problem would stimulate parallel activities in many other groups. Our expectations have been realized; in some instances, dramatically.

The 44 voluntary health agencies and governmental agencies participating in this conference are dramatic evidence of the growing interest and progress in the field of chronic illness. Some of the agencies were not in existence or were only in embryonic stages 5 years ago. The financial support of this conference by four leading insurance companies and the Rockefeller Foundation is dramatic evidence that chronic illness is a problem of the first importance to our Nation.

In the past 5 years, we have learned a great deal more about the problem. Many organizations and communities have acquired successful, real-life experience in providing essential services for the chronically ill. We are beginning to see in clear outline some aspects of the total problem that earlier seemed to be vast and shapeless. In sharing our knowledge and experience and in studying together the newly revealed phenomena, the members of this conference have a wonderful opportunity to push forward once again the line of battle against chronic illness and its tragic consequences.

Other Participating Organizations

In addition to the five organizations which sponsored the Conference on the Care of the Long-Term Patient, the following voluntary and governmental agencies participated:

American Academy for Cerebral Palsy
American Academy of General Practice
American Association of Medical Social Workers
American Association of Nursing Homes
American Association of Psychiatric Social Workers
American Cancer Society
American Dental Association
American Diabetes Association
American Dietetic Association
American Heart Association
American Nurses Association
American Occupational Therapy Association
American Physical Therapy Association
American Psychiatric Association
American Psychosomatic Society
Association of State and Territorial Health Officers
Bureau of Public Assistance, Social Security Administration
Children's Bureau, Social Security Administration
Community Chests and Councils of America
Industrial Medical Association
Muscular Dystrophy Associations of America
National Association for Mental Health
National Association for Practical Nurse Education
National Association of Registered Nursing Homes
National Conference of Rehabilitation Centers
National Epilepsy League
National Foundation for Infantile Paralysis
National Health Council
National League for Nursing
National Medical Association
National Multiple Sclerosis Society
National Rehabilitation Association
National Social Welfare Assembly
National Society for Crippled Children and Adults
National Society for the Prevention of Blindness
National Tuberculosis Association
Office of Vocational Rehabilitation
United Cerebral Palsy Association
Veterans' Administration

Tuberculosis Resurveys of Patients In California Mental Institutions

By WALDO R. OECHSLI, M.D.

THE STEADY DOWNWARD trend of the tuberculosis death rate reached in 1950 a new low rate of 23 per 100,000 population in the United States and 21 per 100,000 in California. The tuberculosis death rate among the hospitalized mentally ill in California was 482 per 100,000 in 1950 and 366 per 100,000 in 1951; it had been as high as 800 in 1946 (table 1). Although the average population in the mental hospitals in 1950 represented only 0.3 percent of the total population of the State, deaths from tuberculosis among patients in mental hospitals constituted 5.5 percent of all tuberculosis deaths in California. Associated with this very high tuberculosis mortality is a prevalence which is many times higher than that of the general population, as revealed by X-ray surveys (*1*). Mental institutions as a group thus constitute probably one of the largest remaining reservoirs of tuberculosis (*2*).

Although mentally ill patients are more or less separated from the general population, they cannot be isolated completely. Home visits are rather frequent and hospitalized patients have contacts with visitors, relatives, and employees of the institution. An increasing proportion are being paroled or discharged. In California, the mentally ill patient with active tuberculosis who no longer requires hospitalization for psychiatric treatment cannot be detained in the mental hospital by reason of his tuberculosis. Hence, the tuberculous, mentally ill patient must be considered an epidemiological factor requiring serious consideration.

Case finding is the first essential in tuberculosis control programs in mental institutions. The initial X-ray survey must be rapid and complete with immediate followup of every suspicious finding, classification by X-ray supplemented by clinical and laboratory investigation, and effective segregation and treatment. Criteria for segregation should be based not merely on the frank activity of the tuberculous lesion but also on the tendency of supposedly quiescent or inactive lesions to reactivate, thus constituting foci of infections to others. Plunkett and his associates highlighted this danger of reactivation which, unquestionably, is a more frequent occurrence than is generally realized (*3*). He reported an "epidemic" of 9 new cases of clinically significant tuberculosis which he attributed to contact with a boy who had a reactivation of supposedly arrested tuberculosis after he had been transferred from the tuberculosis ward to one of the general wards. A similar outbreak of tuberculosis was reported

Dr. Oechsli is roentgenologist, division of preventive medical services, California Department of Public Health. He has served in that capacity since 1945, and for a year preceding that date he was acting chief of the department's bureau of tuberculosis control. He has been in tuberculosis control work since 1926.

in an Ontario mental hospital where 50 new cases suddenly developed in a building in which the situation apparently had been under control (*4*). Thirty-nine of these patients had positive sputum. The source of infection was not identified. In our own experience, reactivation has proved to be a factor requiring constant vigilance (*5*).

To allow the tuberculosis control program to lapse after completion of the initial survey, followup, and segregation is to lose most of what has been gained. It was the conviction of those associated with our initial survey in 1946 that the program should follow these lines: (*a*) centralization in one institution of all tuberculous patients requiring segregation, as soon as facilities could be provided and, in the meantime, as efficient segregation in each institution as possible; (*b*) treatment of both the tuberculosis and the mental condition; (*c*) X-raying of all newly admitted patients, with immediate segregation when needed; (*d*) periodic X-ray and laboratory check of both segregated and unsegregated tuberculous patients; (*e*) establishment of a modified contagious disease technique for active cases; (*f*) frequent chest X-raying of employees caring for tuberculous patients (every 3 months); and (*g*) annual resurvey of the entire, presumably nontuberculous population of mental institutions.

The first case-finding program of any kind in California's mental institutions was instituted in 1934 at Sonoma State Hospital (for the mentally deficient). Butler (*6*) initiated a program of tuberculin testing, X-raying of positive reactors, annual fluoroscopic surveys, segregation, and treatment. In 1943 plans were laid for an active case-finding program (*7*). Kupka (*8*) and Smith (*9*) carried out limited fluoroscopic and X-ray surveys in several institutions. With the purchase of mobile X-ray equipment in 1946, a continuing annual X-ray survey program was started.

Table 1. Tuberculosis death rates in California mental hospitals, 1938–51

Year	Average population	Number of admissions	Number of tuberculosis deaths	Tuberculosis death rate per 100,000	Change in death rate from preceding year (percent)
1938	21, 281	6, 957	144	677	----------
1939	22, 200	7, 042	125	563	−17
1940	22, 853	7, 024	115	502	−11
1941	23, 055	7, 192	133	576	+15
1942	23, 541	7, 694	128	545	−5
1943	23, 961	7, 658	136	568	+4
1944	24, 573	7, 378	148	607	+7
1945	25, 385	8, 166	169	667	+10
1946	26, 101	8, 682	209	800	+20
1947	26, 796	9, 349	199	743	−7
1948	28, 420	10, 644	190	668	−10
1949	29, 675	12, 137	172	580	−13
1950	30, 861	12, 398	149	482	−19
1951	33, 288	12, 567	122	366	−24

Table 2. Tuberculosis death rates in California institutions for the mentally deficient, 1938–51

Year	Average population	Number of tuberculosis deaths	Tuberculosis death rate per 100,000	Change in death rate from preceding year (percent)
1938	3, 723	15	403	----------
1939	3, 840	20	521	+29
1940	3, 950	21	532	+2
1941	4, 279	21	491	−8
1942	4, 547	17	363	−17
1943	4, 738	28	591	+58
1944	4, 782	13	272	−54
1945	4, 951	16	323	+19
1946	5, 078	13	256	−21
1947	5, 326	8	152	+41
1948	5, 741	19	331	+118
1949	6, 205	10	161	−51
1950	6, 467	9	139	−13
1951	6, 541	4	61	−56

In the initial survey (*1*), a prevalence of 8.25 percent of previously unrecognized, reinfection type, pulmonary tuberculosis was discovered among 25,914 mentally ill patients; a lower prevalence, 1.2 percent, was found among 4,798 mentally deficient patients. Approximately half of these patients were found to have active disease requiring segregation and treatment. Since sufficient central facilities for the tuberculous, mentally ill patients were not then available, it was necessary for each superintendent to redistribute the overcrowded patient population to provide the ward space needed for each group of tuberculous patients.

Prevailing conditions made this task of segregation tremendously difficult. Existing wards and buildings were not adapted to the care of tuberculous patients. In a few instances, although wards had been provided for

Table 3. Previously unrecognized cases of pulmonary tuberculosis in four annual resurveys of patients X-rayed in nine California mental hospitals, 1947–51

Type of case	Resurveys			
	1st [1]	2d	3d	4th
Not X-rayed previously (on leave, new admittance without X-ray, etc.)	38	29	34	26
Lesion seen in preceding survey film but interpreted differently	13	7	5	3
Small discrete lesion probably present in preceding survey film but not seen because of technical factors	40	14	21	23
Lesion in current survey missed in preceding survey film	5	3	1	2
Negative miniature film in preceding survey or on admission since preceding survey (new case) [2]	124	80	43	52
Total cases [3]	220	133	104	106
Percent	0. 83	0. 50	0. 38	0. 37
Total [4]	26,452	26,502	27,196	28,937

[1] The findings in the first survey in DeWitt and Modesto State Hospitals are placed with the second survey of other hospitals, since all these patients had been transferred from other State hospitals.

[2] A new case is defined as a patient with X-ray evidence of tuberculosis in the current survey film whose earlier film or films, by direct comparison, showed an absence of the lesion.

[3] Number of patients with X-ray evidence of previously unrecognized pulmonary tuberculosis.

[4] Excluding previously diagnosed cases but including new admissions since previous survey.

the tuberculous patients, bathroom facilities and courtyards had to be used commonly by tuberculous and nontuberculous patients. Attendants and doctors were sometimes fearful of caring for tuberculous patients. A modified contagious disease technique was initiated, but execution was difficult because of the lack of trained personnel and suitably equipped buildings. However, these difficulties were gradually overcome, and effective segregation areas finally were created in most of the hospitals.

The initial survey of all the mental institutions required a year. Then a second round of surveys was begun, with resurveys being made at approximately yearly intervals by means of two mobile units. Two hospitals (DeWitt and Modesto) have been added to the system since 1946, making a total of 11 institutions. At the time of their opening these 2 hospitals were filled by transfer of both mentally ill and mentally deficient patients from other hospitals, rather than by admission from the general population. New construction at most of the hospitals has brought about a decrease in the degree of overcrowding—based on a desirable standard of floor space per patient—from 24.5 percent in the mental hospitals and 26.9 percent in institutions for the mentally deficient to approximately 15 percent in all institutions. The total capacity of mental institutions has been increased from 26,092 in 1946 to 32,979 in 1951 and the capacity of hospitals for the mentally deficient has been increased from 5,078 to 6,627.

The number of admissions during the past 10 years has increased faster than the State population. Annual admissions and readmissions increased from 9,349 in 1947 to 12,567 in 1951—34 percent (table 1). State population during this period increased only from 9,535,000 to 10,602,000—11 percent. The median age of first admissions increased from 43.9 in 1938 to 46.4 in 1949, then dropped to 44.2 in 1951. These fluctuations were due to changes in policy in admitting harmless senile patients. About one-fifth of the resident mentally ill patients are over 65 years of age.

Results of Resurveys

Mentally Ill Patients

In each of the four resurveys reported here, all cases previously diagnosed as active or inactive tuberculosis (whether made in the initial survey or by the hospitals) have been excluded. Cases discovered in the first resurvey (table 3) dropped to one-tenth of those revealed by the initial survey, that is, to 0.83 percent. This was expected, since the findings in the initial survey were the accumulation of many years rather than of a single year. The third survey showed a further decrease to 0.50 percent; and the fourth and fifth surveys, to 0.38 and 0.37 percent, respectively.

These results are similar to those obtained elsewhere. In New York State, Katz and coworkers (*10*) reported an average annual incidence rate of 0.45 percent for the second

Table 4. Previously unrecognized cases of pulmonary tuberculosis in four annual resurveys of patients in four California institutions for the mentally deficient, 1947–51

Type of case	Resurveys			
	1st [1]	2d	3d	4th
Not X-rayed previously (on leave, new admittance without X-ray)	0	2	0	0
Lesion seen in preceding survey film but interpreted differently	2	0	0	0
Small discrete lesion probably present in preceding survey film but not seen because of technical factors	1	0	0	1
Lesion in current survey missed in preceding survey film	0	0	0	0
Negative miniature film in preceding survey or on admission since preceding survey (new case) [2]	18	8	10	10
Total cases [3]	21	10	10	11
Percent	0. 37	0. 18	0. 16	0. 17
Total [4]	5, 695	5, 571	6, 104	6, 554

[1] [2] [3] [4] See corresponding footnote for table 3.

survey (4 years in completion) and 0.32 percent for the third survey. Clark and Weber (*11*) in Ontario reported a steady decrease in new cases from 1.2 percent in their second annual survey (1939) to 0.22 percent in their 14th survey.

Mentally Deficient Patients

In the institutions for the mentally deficient, the initial survey revealed a 1.2 percent prevalence of tuberculosis, a rate which was lower than among the mentally ill. This was attributed chiefly to the much lower median age of mental defectives at the time of admission (15 years of age compared with 45 years for the mentally ill) (*1*). The second survey of mentally deficient patients showed a drop in the survey-discovered cases to 0.37 percent (table 4). The third survey revealed a further drop to 0.18 percent, with the last two surveys showing 0.16 and 0.17 percent, respectively.

Employees

The initial survey (*1*) revealed that 1.4 percent of the employees in mental institutions had X-ray evidence of pulmonary tuberculosis. How many of these represented new infections or active disease is unknown, as it was impossible to follow up these employees through their private physicians. In the second survey, X-ray evidence consistent with active pulmonary tuberculosis was found in 0.2 percent of employees so examined. The three succeeding surveys revealed that 0.09, 0.04 and 0.05 percent, respectively, had evidence suggesting recent tuberculosis (table 5). Earlier 14″ x 17″ films had been negative in the 20 survey-discovered cases.

Analysis of Survey-Discovered Cases

Some of the survey-discovered cases in each resurvey had X-rays showing what appeared to be fibrotic or calcific lesions. It appeared obvious that these were not instances of new infection but were of longer standing. On investigation, it was found that in the four resurveys 0.09 to 0.14 percent of the total patients surveyed had not been X-rayed in the previous survey. Nearly all of these patients had been admitted at or very near the time of the resurvey and the film taken for the resurvey thus had served as an admission film. This accounted for part of these calcific and fibrotic

Table 5. Previously unrecognized cases of pulmonary tuberculosis found in four annual resurveys among employees of 10 [1] California mental institutions, 1947–51

Institution	Resurveys				
	1st	2d	3d	4th	Total
Agnews	0	1	0	0	1
Camarillo	0	1	1	0	2
Mendocino	0	0	0	0	0
Modesto	2	0	0	0	2
Napa	2	0	0	1	3
Norwalk	1	0	0	0	1
Pacific Colony	0	0	0	0	0
Patton	2	2	0	2	6
Sonoma	0	0	0	0	0
Stockton	3	1	1	0	5
Total cases found	10	5	2	3	20
Total patients X-rayed	4, 984	5, 364	5, 665	6, 065	------
Percentage X-rayed	0. 20	0. 09	0. 04	0. 05	------

[1] One institution, which X-rayed employees annually with 14″ x 17″ films, is not included in this table.

appearing lesions. In the remainder, an earlier miniature survey film or a 14″ x 17″ film was located for comparison, the results of which are to be described.

In a very few instances (0.01 to 0.05 percent), the lesion, found on resurvey, had been seen previously but had been diagnosed differently—usually as a healed primary lesion in one survey and as minimal, fibrotic reinfection tuberculosis in the next. In one instance, unhappily, a basal lesion was diagnosed as pneumonia in the earlier survey film; the patient was neither X-rayed again nor followed up during the year; and, in the succeeding survey, there had been extensive spread through both lungs, with cavity formation. This patient died later of advanced tuberculosis.

In one group, on re-examining the preceding survey film, one could not be entirely certain whether or not the lesion discovered in the current survey had been present previously. In nearly all of these instances, the lesion seen in the current film was in the form of small, discrete nodules or fine, fibrotic strands. In the earlier film, the small lesion was partially or completely obscured by clavicle, rib, or scapula, or made invisible by undue darkness or lightness of the film, rotation, or movement. Yet the characteristics of the lesion in the current 14″ x 17″ film suggested that it must have been of long standing, and probably would have been evident in the earlier survey film, had an entirely satisfactory film been obtained.

Sometimes, the partially obscured lesion was discernible upon close comparison with the current film. This group of cases could be considered as having been missed for technical reasons. Obviously, it is not always possible to secure films of restless, mentally ill patients that, technically, are as satisfactory as those of normal individuals. Unless one takes a certain calculated risk, the number of 14″ x 17″ confirmatory films required would be much higher than our current 5 to 6 percent.

Missed Lesions

In another group, fortunately small, reexamination of the miniature film of the previous year revealed in contrast to the above group of cases, the presence of definite infiltration in a part of the lungs where it was clearly visible even without reference to the later film. In other words, these lesions had been missed outright. In the second survey, there were five such instances (0.02 percent of the total number of patients X-rayed). Six cases were missed in the three succeeding surveys.

New Lesions

There remains for consideration the most important group, for which the resurveys are conducted, the "new" cases. These are specified as individuals whose current films present findings consistent with recent, active pulmonary tuberculosis and whose earlier films (within a year's interval) had been radiologically clear. Even in retrospect and upon careful comparison with the current resurvey film there was no X-ray evidence of tuberculous infiltration in the earlier film, either in the currently involved area or elsewhere. It would be desirable if laboratory proof in the finding of tubercle bacilli could have been included in the specification of these new cases. Chiefly, because sufficient laboratory personnel could not be obtained at the time of these resurveys, but also because of the inability of the mentally ill to cooperate in supplying suitable sputum specimens, this requirement of laboratory proof could not be insisted upon. Neither was there personnel to carry out tuberculin skin testing. In following all of these cases by X-ray, with serial films over a period of several years, these lesions persisted with clearing or progression and, in general, followed the usual course of tuberculous lesions.

Discussion

It should be stressed that the significance of findings in resurveys in tuberculosis case-finding programs differs basically from the significance of findings in the initial survey, in that the first survey revealed the prevalence of cases of tuberculosis which had accumulated over the years, through admission of patients with undiagnosed tuberculosis and transmission of the disease from these patients to others in the greatly overcrowded conditions once prevalent in mental institutions. In the resurveys, about half the patients with survey-discovered tuberculosis, by every test that could be applied under the then existing circumstances, had either ac-

quired or developed their tuberculosis in the interval since the previous survey. The possibility exists that some of these patients may have had microscopic lesions in earlier films, too small to be recognized even in retrospect.

The group designated as "new cases" cannot be used to compute a tuberculosis attack rate or an incidence rate for the reason that these cases do not constitute the total number of cases diagnosed in the mental institutions. Some new cases arising after admission to the institutions were diagnosed by the hospital staffs because of symptoms, such as loss of weight and fever. The total number of patients resurveyed each time included all those found to be negative in the preceding survey plus those admitted during this interval with negative chest X-rays. Omitted, of course, were those who were discharged or who had died since the preceding survey, as well as those who were both admitted and discharged during this period. It is apparent that, although continuing tuberculosis surveys in mental institutions show a diminishing return in numbers of new cases, these data are insufficient per se to justify an assumption of decreasing incidence.

Both the number of survey-discovered cases and the total number of cases reported by all the mental institutions from all sources have shown a leveling off after the rise resulting from the initial survey (commencing with 1948). Although the cause of this plateau in the number of reported cases is obscure, one must consider that this indicates the possibility of the persistence of one or more of the loopholes of infection among which the following have been noted:

1. Reactivation of supposedly inactive tuberculous lesions: (*a*) visible to X-ray; (*b*) invisible to X-ray, with the presumption that infection occurred previous to admission or to the earlier survey but that the lesion was not active or visible to X-ray.

2. Occasional failure to X-ray newly admitted patients.

3. Missed cases in surveys or admission X-rays.

4. Deficiencies in segregation: (*a*) inadequate physical facilities; (*b*) insufficient personnel; (*c*) untrained personnel (employee or patient-worker); (*d*) delay in segregation or underestimating the need for segregation among new admittances or survey-discovered cases because of minimal extent of disease, apparent fibrotic character of lesions, lack of symptoms, failure to find tubercle bacilli, lack of bed space on the tuberculosis wards, losing sight of the patient, and reluctance to lose a "good worker."

It is important that the identification of significant tuberculosis and segregation of these patients be carried out as expeditiously as possible (*12*). In our institutions, patients with miniature-film evidence suggesting tuberculosis are X-rayed on 14″ x 17″ films by the mobile unit while the survey is still in progress. These films are interpreted promptly by the State health department roentgenologist and turned over to the hospital staff with a tentative X-ray impression and a recommendation regarding the need for segregation. These findings are usually followed until they can be supplemented by sputum examination, clinical observation, and serial X-ray examination, and until the best disposition of the patient can be determined. It is wise to err on the side of safety in these determinations (*5*).

Tuberculosis Death Rate

The tuberculosis death rate is an important index of the long-range effectiveness of any tuberculosis control program in a given area or group. In the progressive decline in the death rate from tuberculosis in this country, the total control program has unquestionably been a major factor. In contrast to this fortunate trend, the death rate for tuberculosis in California mental institutions remained quite high and, until recent years, showed little tendency to decline. There was a downward trend from 1922 to 1938 (*1*). However, between 1938 and 1946 there was actually an 18-percent increase, culminating in the 1946 peak rate of 800 per 100,000 (table 1). During this latter period, there was an increasing awareness of tuberculosis as a serious health problem in mental institutions; and this awareness, resulting in more accurate reporting of the cause of death, undoubtedly was a factor in the increase in the reported tuberculosis death rate in mental institutions between 1943 and 1946. On the other hand, the tuberculosis death rate for California

dropped 29 percent during the same period—from 60.5 to 42.9.

In contrast to the rising tuberculosis death rate among the mentally ill from 1936 to 1946, there was a gratifying reversal in trend following the initial survey in 1946. The death rate dropped from 800 in that year to 366 in 1951, a 54-percent decrease which, incidentally, is similar percentagewise to the decrease in the tuberculosis death rate for the State during the same period (from 42.9 to 19.4). The situation was more favorable among the mentally deficient; the tuberculosis death rate had not been as high for them as for the mentally ill. From a maximum of 798 per 100,000 (1927–31), the rate has shown a general downward trend, becoming quite pronounced since 1948 (table 2). The 1951 rate of 61 per 100,000 is only a little over three times the rate for the State as a whole.

Although, as Anderson pointed out (*13*), it is impossible to attain complete statistical accuracy in a group this size, the trend appears to indicate a greatly improved situation which presumably has a direct and significant connection with the entire control program in the mental institutions in the State, including case finding, segregation, and treatment. Since treatment of these patients had not been intensive during the period before 1952, the preventive aspect of the program (reducing contact between patients with active tuberculosis and nontuberculous patients and, therefore, incidence of new cases) probably should be credited with the major part of this favorable change, as Katz has suggested (*14*). Whether we can expect the results of this program to catch up with the results of the program in the general population of the State or even in the general hospitals is open to some question. The death rate in the general population includes all ages, while the population of mental hospitals (especially for the mentally ill) represents a distinctly older age group in which the tuberculosis death rate would naturally be considerably higher than the death rate for the all-age group.

Some reports indicate that mental patients respond to treatment of their tuberculosis as well as nonmental patients with the same amount and type of tuberculosis (*15, 16*). On the other hand, the Sunmount study suggested that emotional factors materially and unfavorably influence the reaction or response of the individual to his tuberculosis (*17*). In any case, the fact that the tuberculosis death rate among the mentally ill in 1951 was still high shows the need for continued, unremitting prosecution of case finding and segregation of patients with communicable or potentially communicable disease and for active treatment by every means which can be applied.

Pleasure's experience in Central Islip State Hospital, Central Islip, N. Y., to mention only one example, is pertinent in showing the need for continued case finding (*18*). After an initial survey of over 7,000 patients in this mental hospital in 1941, an active control program was put into effect. Not only were 132 new cases discovered by resurvey in 1946, but 134 other new cases of tuberculosis were diagnosed through clinical methods during the 5-year period. Furthermore, autopsies revealed 10 deaths from tuberculosis in patients not suspected of having the disease, and in 9 patients who died from other causes, tuberculosis was an incidental finding. Pleasure expressed the following convictions: Unsegregated patients with supposedly arrested tuberculosis should be X-rayed frequently; they should be kept in special wards; weight loss or other clinical findings are totally inadequate for case finding; a 5-year period is too long between surveys; patients in wards or buildings where a high prevalence or incidence of tuberculosis exists should be surveyed more frequently than annually (perhaps every 4 months); and patients with endobronchial lesions may be carriers even though they have a negative X-ray. The author agrees completely with these convictions. The complexity of the factors involved in an adequate control program in mental institutions dictates the necessity of maintaining constant vigilance in the case-finding and segregation program, supplemented by every applicable means of treatment.

Employees

Fifteen of the 20 cases of tuberculosis discovered among employees in the resurveys were hospital attendants (psychiatric technicians). The others were a registered nurse, a laboratory

attendant, a laundry employee, a stenographer, and a painter. Only 3 of the psychiatric attendants had been assigned to tuberculosis wards. Half of the total number of cases were revealed in the second survey, soon after or during the segregation of patients from the first survey. Thus, the presumption is strong that infection may have been derived largely from unsegregated patients during the period prior to the completion of segregation resulting from the initial survey. Fourteen of these 20 employees made application for compensation by the Industrial Accident Commission because of tuberculosis acquired in the course of their work; only one was denied compensation (table 6).

The survey-discovered cases represent only part of the cases diagnosed among employees. Between 1938 and 1951 a total of 71 employees of California mental institutions were awarded compensation by the Industrial Accident Commission. During the 6-year survey period, more than twice as many cases per year (survey- and nonsurvey-discovered) were awarded compensation than during the 8-year presurvey period. This suggests greater consciousness and better discovery of tuberculosis on the part of employees and physicians, since there was no essential change in the proportion of cases accepted by the Industrial Accident Commission.

"Missed" Cases

As Garland has said, "The interpretation of roentgenograms, as in other clinical methods and diagnostic aids, is subject to a certain degree of inherent error" (*19*). The character and location of the infiltration probably were factors in the missing of lesions in our surveys. The infiltration in seven cases was soft and hazy in appearance; the density was not great, but it was readily discernible on reinspection of the miniature film. These lesions were located below the clavicle and quite well laterally in the upper lobe. The missed lesions in the four other cases were apical or subapical, but located more mesially. They were less diffuse, slightly more dense, and probably were confused with the tip of the first rib or a transverse process. However, in retrospect they were easily distinguishable.

Since the standard for missed lesions, in this report, is the finding of lesions in subsequent examinations, it is possible that a few patients with undetected lesions were discharged between surveys. It is also possible that other missed lesions would have been discovered had double reading been practicable.

Table 6. Number of employees of mental institutions applying to the California Compensation Insurance Fund because of diagnosis of tuberculosis, 1938–51

Diagnosis period	Applying for compensation	Awarded compensation	Rejected	Not applying
Presurvey period (1938–45)	32	26	8	[1]
Survey period (1946–51)	57	45	12	[1]
Discovered by first survey (1946)	7	6	1	27
Discovered by second to fifth surveys (1947–51)	14	13	1	6
Discovered by nonsurvey methods	36	26	10	[1]

[1] Not available.

SOURCE: California Compensation Insurance Fund, correspondence.

Conclusions

1. Mental institutions constitute one of the greatest existing reservoirs of active tuberculosis in this country. This reservoir has important epidemiological significance in relation to the general population.

2. Rapid and complete X-ray survey of mental hospital populations, with adequate segregation and treatment, is essential to a control program.

3. Four annual resurveys of the patients in mental institutions in California have revealed a diminishing, but significant, number of cases of previously unrecognized, pulmonary tuberculosis.

4. These findings, which are considered to be the result of "loopholes of infection," indicate the need for unremitting, active prosecution of the entire control program. Essential to such a program are a closely controlled hospital-admission X-ray program and an annual X-ray resurvey of the entire hospital population, with

adequate segregation of those patients requiring it.

5. An annual survey program among employees in the California mental institutions revealed a decreasing number with X-ray evidence of previously unrecognized, pulmonary tuberculosis. However, some new cases were diagnosed outside the institutional surveys. The data available are insufficient to formulate any idea regarding a trend in incidence.

6. The long-range effectiveness of the tuberculosis control program in mental institutions in California is reflected in the declining tuberculosis death rate. During the period from 1946 to 1951, the death rate among mentally ill patients decreased 54 percent—from 800 to 366 per 100,000. For the same period the death rate among the mentally deficient decreased 76 percent—from 256 to 61 per 100,000. These decreases are in sharp contrast to the trend prior to 1946. Comparison with rates for the general population must take into account the radical differences in age structure of these groups.

REFERENCES

(*1*) Oechsli, W. R.: Tuberculosis control program of nine mental institutions. Pub. Health Rep. 64: 4–16 (1949).

(*2*) Wassersug, J. D., and McLaughlin, W. F.: Tuberculosis in mental hospitals. J. Nerv. & Ment. Dis. 113: 115–126 (1951).

(*3*) Plunkett, R. E., Katz, J., Thompson, M. E., and Donk, R. R.: Tuberculosis in a school for mental defectives. Am. J. Pub. Health 39: 1016–1020 (1949).

(*4*) Tuberculosis control in Ontario Mental Hospital. Special report. Woodstock, Ontario, Ontario Hospital, 1950.

(*5*) Crawfis, E. H., Kupka, E., and Oechsli, W. R.: Tuberculosis in California mental hospitals—The isolation problem. California Med. 79: 390–393 (1953).

(*6*) Butler, F. O.: Tuberculosis in Sonoma State Home. California & West. Med. 61: 98–99 (1944).

(*7*) Heffner, D. S.: Future plans of the department of institutions. California & West. Med. 61: 100 (1944).

(*8*) Kupka, E.: Problem of tuberculosis in California State hospitals. California & West. Med. 61: 96–98 (1944).

(*9*) Smith, R. E.: Experiences at Patton State Hospital. California & West. Med. 61: 99–100 (1944).

(*10*) Katz, J., Plunkett, R. E., and Lang, H. B.: Tuberculosis control in mental institutions. New York State J. Med. 51: 349–352 (1951).

(*11*) Clark, E. A., and Weber, J. J.: Tuberculosis control in Ontario mental hospitals. Ment. Hosp. 3: 4–5 (May 1952).

(*12*) Reisner, D.: Prompt diagnosis vital. Bull. Nat. Tuberc. A. 37: 25–26 (1951).

(*13*) Anderson, R. J.: Tuberculosis problems in mental hospitals. Ment. Hosp. 3: 4–5 (Mar. 1952).

(*14*) Katz, J.: Trend of tuberculosis morbidity. Am. Rev. Tuberc. 67: 279–285. (1953).

(*15*) Lambiotte, L. O., Washington, E. L., and Bozalis, G. S.: Management of tuberculosis in psychotic patients. Am. Rev. Tuberc. 59: 289–310 (1949).

(*16*) Weiner, A.: Treatment of psychiatric tuberculous patients. Dis. of Chest 17: 388–397 (1950).

(*17*) Daniels, G. E., and Davidoff, E.: The mental aspects of tuberculosis. Am. Rev. Tuberc. 62: 532–538 (1950).

(*18*) Pleasure, H.: Tuberculosis in a State hospital: A practical program with five-year follow-up. Psychiatric Quart. 22: 445–461 (1948).

(*19*) Garland, L. H.: On the scientific evaluation of diagnostic procedures. Radiology 52: 309–328 (1949).

Routine Chest X-rays Of All Patients Admitted To General Hospitals

THE NUMBER of hospitals in the United States having facilities for routine admission X-rays has greatly increased since 1948. This development is due to some extent to the efforts of the National Tuberculosis Association and the American Hospital Association, which, with the cooperation of the Chronic Disease and Tuberculosis Program of the Public Health Service, for several years have been promoting routine chest X-ray examinations of all general hospital admissions.

The increase is particularly encouraging since the yield from this method of case finding has been high. The amount of tuberculosis discovered depends, of course, upon the kinds of patients admitted. From various studies we have found that hospital X-ray screening not only uncovers a high rate of active tuberculosis (2 to 4 cases per 1,000), but in addition, discovers many persons with suspected cardiovascular disease and other nontuberculous chest pathology. For instance, among 214,851 persons X-rayed on admission to general hospitals in New York State during 1951, there were 3.58 persons per 1,000 X-rayed whose films indicated active tuberculosis, 4.59 persons whose films indicated suspected tuberculosis, and 110.40 persons whose films indicated other conditions. In 1948 and 1949, 80 percent of all the tuberculosis cases found in New York's hospital admission screening programs were new cases not previously reported (*1*).

Another noteworthy result of this method may be seen in the findings of three Chicago area hospitals—the Cook County, the Provident, and the Mercy. During a recent 4-year period, 8,760 tuberculosis suspects were uncovered from among 292,000 persons X-rayed on admission to the 3 hospitals (*2*). Because of the fruitful yield of this technique, routine admission chest X-ray programs are an economical approach to the problem of case finding.

Many of the hospitals that report having facilities for routine admission chest X-rays, however, do not X-ray all admissions. There are various reasons for this. It is not always possible, for example, to X-ray all obstetrical cases or all persons who are admitted for emergency medical or surgical treatment. There is, of course, little point in repeating the routine X-raying of persons readmitted within a very short time. Moreover, it is always desirable to avoid unnecessary exposure to X-rays.

The following tables, compiled from information found in *Hospitals* (*3*), give a picture of the facilities at present available in the United States for routine admission chest X-rays. Table 1 shows the proportion of hospitals of various sizes that have facilities for routine chest X-ray on admission. As pointed out above, not all admissions to these hospitals receive an X-ray.

It should be noted that as the hospitals increase in size, the percentage of hospitals in each category having facilities for routine chest X-ray on admission also increases. In hospitals with 250 beds and over, nearly 50 percent report

Table 1. General and special short-term hospitals with facilities for routine chest X-ray on admission, 1952 [1]

Number of beds	Number of hospitals having facilities	Percent of total hospitals	Estimated admissions to hospitals with facilities	Percent of total admissions with access to facilities
Under 50	287	12. 5	288, 450	12. 5
50–99	213	17. 9	510, 472	16. 6
100–249	301	26. 0	1, 575, 940	24. 7
250 and over	218	46. 1	2, 660, 716	47. 1
Total	1, 019	19. 9	5, 035, 578	28. 9

[1] Information generally for 1952, but in a few instances where no report for 1952 was received, earlier data were used.

This material was prepared by the Chronic Disease and Tuberculosis Program of the Division of Special Health Services, Public Health Service.

Table 2. General and special short-term hospitals with facilities for routine chest X-rays on admissions, by State, 1952

State	Number of hospitals	Hospitals with facilities for routine chest X-rays [1]	
		Number	Percent
United States total	5,122	1,019	19.9
Alabama	92	18	19.6
Arizona	38	8	21.1
Arkansas	66	6	9.1
California	273	64	23.4
Colorado	75	10	13.3
Connecticut	40	16	40.0
Delaware	9	4	44.4
District of Columbia	16	4	25.0
Florida	120	21	17.5
Georgia	121	11	9.1
Idaho	46	6	13.0
Illinois	241	97	40.2
Indiana	112	24	21.4
Iowa	111	12	10.8
Kansas	120	9	7.5
Kentucky	94	24	25.5
Louisiana	106	17	16.0
Maine	41	10	24.4
Maryland	44	10	22.7
Massachusetts	142	37	26.1
Michigan	195	58	29.7
Minnesota	171	26	15.2
Mississippi	89	11	12.4
Missouri	123	25	20.3
Montana	46	6	13.0
Nebraska	99	15	15.2
Nevada	11	2	18.2
New Hampshire	33	2	6.1
New Jersey	99	16	16.2
New Mexico	31	4	12.9
New York	339	121	35.7
North Carolina	148	17	11.5
North Dakota	41	6	14.6
Ohio	185	40	21.6
Oklahoma	99	14	14.1
Oregon	64	6	9.4
Pennsylvania	251	60	23.9
Rhode Island	14	3	21.4
South Carolina	59	4	6.8
South Dakota	50	7	14.0
Tennessee	118	21	17.8
Texas	470	57	12.1
Utah	28	4	14.3
Vermont	23	3	13.0
Virginia	91	20	22.0
Washington	100	17	17.0
West Virginia	67	12	17.9
Wisconsin	144	31	21.5
Wyoming	27	3	11.1

[1] Information generally for 1952, but in a few instances where no report for 1952 was received, earlier data were used.

having such facilities. Similarly, the proportion of admissions having access to these facilities increases with the size of the hospital. The proportion of admissions actually X-rayed is not known.

Compiled from the same source, table 2 shows by State the number of general hospitals with facilities for routine chest X-ray of admissions.

In no State does a majority of hospitals report having facilities for routine chest X-rays on admission. To illustrate the variation between States: In 4 States, more than one-third of the hospitals report that they have such facilities, while in each of 6 other States, the total is less than 10 percent.

Although we have seen fairly good progress in recent years, we must acknowledge the facts that more than half of the larger general and special short-term hospitals still lack facilities for routine admission chest X-rays, and that this percentage is even greater among the smaller hospitals. Consequently, greater efforts will need to be made in interesting more hospitals in this productive activity. Only thus can further progress be assured.

REFERENCES

(1) Siegal, W., Plunkett, R. E., and Hilleboe, H. E.: Chest X-rays on admission pay off—to patients, hospital staff, and community. Mod. Hosp. 76: 98–108 (July 1951).

(2) Tuberculosis Institute of Chicago and Cook County: Hospital admission X-rays uncover 8,760 TB suspects in Chicago area. Challenge 8: 10 (Oct. 1953).

(3) Hospitals. Administrators guide issue. Vol. 27, June 1953, part 2.

How New Hampshire Produced Films On Water Pollution

By Terrence P. Frost, B.S.

SKILLED AMATEURS enabled New Hampshire to bypass the major cost of film production, the cost of professional labor, in preparing three films on water pollution control. Volunteers in the State health department and the water pollution commission enabled the State to save 95 percent of the ordinary costs of film production. Otherwise, the films could not have been made within the commission's cash budget.

Why did the New Hampshire Water Pollution Commission go into the business of producing films?

It realized the value of visual aids in telling a quick and vivid story. Better a technicolor picture of a New Hampshire watershed than too many statistics and too much technical detail at public hearings, the commission's staff reasoned—the technical data are necessary, yes, but a brief film would bolster their meaning.

Consequently, the water pollution commission engaged in the production of "The Laconia Sewage Treatment Plan," which pictures the construction of a modern, well-designed sewage treatment plant from the time when the excavation was begun to the completion of the plant. It tells why the plant is needed and what it means to the thriving lake city of Laconia, N. H. The two other color films produced by the commission were both developed specifically for practical use at public and legislative hearings to get across a quick picture, in each instance, of an entire watershed.

Both the other two films, "The Sugar River" and "The Mascoma Speaks," show the multiple water uses and abuses of the entire basins of the two rivers, starting in sequence near the headwaters. They each run about 20 minutes.

Mr. Frost is water pollution biologist of the New Hampshire State Water Pollution Commission and a former staff editor of Outdoors.

Value of the Films

Audiovisual presentation of this kind materially helps in establishing a sound basis for discussion leading to stream classifications and concrete watershed policies for pollution control. The intent in producing these films was not to emphasize or minimize existing pollution but to orient the audience so that a later discussion of staff recommendations for pollution control and legislation could be readily understandable, more concise, and less time consuming than oral reporting of a mass of technical facts.

These films have a high secondary value in familiarizing the general public with the problems of water pollution control and abatement. Other than their low cost, there is a sound justification in the value of the intimate feeling an audience gets from seeing familiar scenes and locales, and the relative increase in attention, interest, and recall derived from this fact.

Occasionally, the films have been sent outside New Hampshire. They are widely circulated locally. Public schools, service clubs, fish and game groups, women's clubs, and others are requesting the films routinely. The commission's latest film, "The Mascoma Speaks," in circulation since early 1953, has gone to the Federated Sewage Works Association, the New England Water Works Association, the New England Interstate Water Pollution Control Compact group, and Purdue University. It has been viewed at a legislative hearing and at hearings of the water pollution commission and by the general public through arrangements made by service and social clubs.

An Amateur Production, Strictly

What are the mechanics of amateur production from start to finish? As an illustration, let us follow the commission's production of "The Mascoma Speaks."

An associate sanitary engineer with the New Hampshire State Health Department, Francis J. Lariviere, who had extensive amateur experience with film photography, was available for the filming, film cutting, editing, and other technical work. He also recorded sound on the film. Comments on the photography of "The Mascoma Speaks" indicated it approaches professional levels.

Essential, before shooting a single foot of film, was an intimate knowledge of the watershed to be depicted. Members of the water pollution commission staff gained this by hiking over the terrain. Some of the shots to be taken later were selected during these walks.

There could be no set schedules for completion of the film since all of the amateur production crew had other duties and assignments which came first. Usually, a commission staff member and Lariviere went out together on good clear days and filmed as much as possible while the weather held.

Film rolls were sent to a processing laboratory as soon as they had been exposed. It took 2 seasons of a day here and a day there to film the watershed. In the meantime and incidental to the technical and engineering study of the Mascoma basin, in informal conferences and on other occasions when time permitted, the commission staff members developed a script. There were numerous rewrites and drafts before a suitable final draft was worked out. More filming was needed to get the unforeseen shots that developed during the scriptwriting sessions.

Ultimately, 2,000 feet of film were ready for editing. The script was timed for each scene by reading aloud. The best film shots were integrated with the script.

At home, on his own time, Lariviere experimented with and filmed the title heads which would be superimposed on the final film. He also tape-recorded suitable background music to match the mood of the script and photography.

When the best job possible of matching film and script had been done, the film was sent to a laboratory to be copied. The copy included a magnetic sound track.

"Talking" the script onto the magnetic sound track was the last step in production. Clarence W. Metcalf, director of the health department's bureau of health education, perfected the commentary and recorded it on the film.

To incorporate the narration on film, synchronize the script with the photography, and eliminate background and projection noises, the crew borrowed facilities of a local radio station. In a soundproof room, they set up the projector and the tape recorder containing the tape of the background music. Through a window in the soundproof room, the film was projected onto the wall of an adjacent room in which Metcalf, as narrator and commentator, watched the film and "talked" the script into the recorder microphone of the projector. Lariviere operated both the projector and tape-recorder volume controls from the soundproof room. Both men wore headsets for monitoring (see picture). When the commentary was perfected, the film was finished.

Production Cost Estimates

In actual cash outlay, how much did "The Mascoma Speaks" cost the New Hampshire Water Pollution Commission?

Less than $400 was actually spent. Two thousand feet of film cost $150. One copy of the finished film cost about $220.

It should be cautioned that these figures may appear somewhat unrealistic for estimating the actual cost of film production by a public group. Since labor constitutes by far the largest portion of the real cost of any film, in all fairness, it should be pointed out that it would take skilled amateur technicians, using borrowed facilities and working on a piecemeal basis, much longer than professional film producers to do a finished, creditable sound film.

The staff of the water pollution commission did the entire production job with the exception of the film processing and copying. Many of these hours were spent after the office day, in the evenings, and during weekends.

The film and sound projector and editing

From soundproof room film is projected through window to adjacent room where narrator reads from script. Note use of headsets by operator and narrator for monitoring.

equipment were borrowed from the New Hampshire State Health Department's bureau of health education. The tape recorder is part of the commission's regular office equipment. The camera, equipped with 17-mm., 1- and 3-inch telephoto wide-angle lenses, is the property of the New Hampshire Water Pollution Commission.

Even if the commission had purchased all the necessary equipment, it could have made its films at less than 10 percent of the estimated commercial cost, when the estimated cost of labor is disregarded. If purchased by the commission, the equipment used would have cost approximately $1,520, or separately, as follows:

Camera and accessories	$350
Projector (film and sound)	800
Film (2,000 feet)	150
1 copy of film	220

Some Disadvantages

Any group of people working cooperatively on film production can duplicate New Hampshire's efforts if they are fortunate in having available key employees who by avocation are expert photographers and take pictures for their own enjoyment, or who have talents approaching those of a film producer.

There are definite disadvantages to the use of magnetic sound film. Not many viewing groups own magnetic sound projectors. From a utilization standpoint, these films are limited to audiences which can procure magnetic sound equipment, publicly owned or otherwise, and projectionists, amateur or otherwise, who are skilled in its use. There is a significant limitation, too, in using magnetic sound recording on film—magnetic sound films are more difficult

to duplicate than the optical type film. The commission has, however, duplicated one magnetic film in every respect, with negligible loss.

However, New Hampshire's three color films have already admirably served their primary purpose in setting up stream classifications. The films have been well received by a variety of audiences. The experience of the water pollution commission indicates that many useful films could be made by health departments with a story to tell and a few people on the staff with the necessary talents to put the story on film. Although such films are of amateur origin, they can be practically produced at less cost than professional films, with which they merit favorable comparison.

Ideas

CD Control Format

POLK COUNTY, IOWA. A modification of the existing regulations for the control of communicable disease in Polk County, Iowa, has passed a successful 2-year trial period, according to Abraham Gelperin, M.D., Dr.P.H., director of the Des Moines and Polk County health departments, in the January 1954 issue of the *Journal of the Iowa State Medical Society.*

The program, as instituted in 1951, was summarized by Dr. Gelperin as follows:

1. The minimum period of isolation of patients with communicable diseases is unchanged.

2. The use of placards for all communicable diseases is at the discretion of the director of public health. They will not be used when there is adequate isolation of the patient and adequate medical attention. Tuberculosis is included in this group.

3. Antibiotic prophylaxis for familial and other intimate contacts to a case of scarlet fever or streptococcal upper-respiratory-tract disease is discretionary with the family physician. The doctor may employ any antibiotic with any regime, provided the contact is adequately protected for the 7-day quarantine period. Adequate isolation and treatment of the patient is the prerequisite to this routine.

4. Antibiotic or sulfa-drug prophylaxis of familial and other intimate contacts of a patient with meningococcal meningitis is also at the discretion of the family physician. Adequate isolation and treatment of the patient is again the prerequisite.

5. Contacts of a case of pertussis fall into two categories, those who have had previous vaccine prophylaxis and those with no history of specific immunization. In the former instance, a single booster is recommended, provided the prophylactic inoculations have not been administered during the previous year and the contact is under 12 years of age. These children may continue in school. In the second instance, child contacts are to be excluded for 2 weeks unless immunization is immediately initiated. The second and third injections are given at 2-week intervals, instead of 4 weeks apart.

Immunization against pertussis of unprotected familial or intimate contacts over 12 years of age is to be initiated with caution. The older teen-age contact may forego this preventive inoculation, on approval of the family physician.

6. A new regulation for infectious hepatitis is included. Schoolchildren are excluded for a minimum of 4 weeks to insure adequate recovery from this disease. All familial and intimate contacts are given gamma globulin by the family doctor according to a schedule. Since the State regulations for infectious hepatitis isolation is 7 days, the family physician determines when an adult may be released for work.

7. Contacts of patients with measles, German measles, mumps, and chickenpox are not quarantined. Gamma globulin is recommended for modification of measles in child contacts. All school personnel is informed that contacts of the four virus diseases are to be inspected each day as a part of homeroom morning inspection by the homeroom teacher, and when first signs of illness appear, referred to the school nurse or to the family doctor if there is no school nurse available.

8. Local regulations concerning other communicable diseases, such as poliomyelitis, scabies, ringworm of the scalp, impetigo, diphtheria, and others, are as listed in the rules and regulations of the control of communicable diseases, Iowa State Department of Health.

9. An intimate contact is any person who has spent time with the patient at home during the prodromal-symptom period of the disease in question, or has been a playmate of the patient during the period just mentioned. It is not to include contacts in the schoolroom or during normal working relations except under very unusual circumstances.

The Iowa State Department of Health has suggested to other counties that they also try the new modifications. If sufficient testing shows the demonstration to be effective, action will be taken to adopt them as official rules and regulations of the State.

Prevention of Water Accidents

—*A Half Century Reviewed*—

By RICHARD L. BROWN, M.S.

THE DROWNING RATE per 100,000 population in the United States has been cut in half in the past 40 years, in spite of the fact that the number of people using aquatic facilities has multiplied many times.

This remarkable accomplishment in reducing aquatic accidents and spreading the message of water safety can be attributed to many factors—the primary one of which is doubtless the efforts made by the many organizations concerned with health, safety, and recreation.

At the turn of the century, little was being done to teach people how to swim, or to protect them in any way when they went swimming. Few pools existed. The Young Men's Christian Association was one of the few national organizations that had made any attempt to encourage swimming skills among their membership. With their interest in the field of physical education it was natural that they should be among the first to include swimming pools in their facilities. The first YMCA pool, 14 by 45 feet, built in 1885 in Brooklyn, was called a swimming bath. Detroit followed in 1886 with a natatorium that included a pool 16 by 32 feet. By 1909 there were 293 YMCA swimming pools in the United States. Today there are more than 600.

Meanwhile, in Providence, R. I., a waterfront reporter, the late Commodore Wilbert E. Longfellow, was becoming highly interested in the drowning problem. While covering the east side of the Providence River and upper Narragansett Bay he became concerned over the high frequency of the preventable drownings—caused mainly because of lack of swimming and lifesaving knowledge and adequate supervision.

"Bathing beaches in 1900 were a far cry from the modern swimming resorts and pools of today," he recounted. "Women were swathed from chin to toe in clumsy suits that made swimming almost impossible. Beaches lacked rescue equipment and life guards frequently doubled as waiters. Rescue methods were mostly of the 'bust 'em in the jaw and roll 'em over the barrel' type."

Early Lifesaving Activities

To help correct the situation young Longfellow volunteered his spare time to the United States Volunteer Life Saving Corps, one of the few organizations concerned with the problem and active in only a few eastern cities. In 1909 he received the title "commodore" and appointment as State superintendent of the corps in Rhode Island. Undaunted by a spinal disease which confined him to bed and threatened his life in 1907, the commodore carried on his life-

Mr. Brown is the assistant director of the Water Safety Service of the American National Red Cross and secretary-treasurer of the Conference for National Cooperation in Aquatics.

saving work by means of correspondence. During convalescence he toured the waterfront giving lectures, and, with the aid of an assistant, demonstrations. In 1909, he became commodore in chief and general superintendent of the corps in New York.

Now recognized as a national authority on water safety, Longfellow was asked to prepare material on lifesaving for the Boy Scout Handbook, published in 1911. The Boy Scouts, with their establishment in 1910, had specified swimming and water safety as part of their program.

Encouraged by the success of lifesaving efforts in Rhode Island and New York, Longfellow urged nationwide expansion of the VLSC. When the governing body failed to endorse this proposal he began to seek elsewhere for assistance.

Commodore Longfellow had met Major Charles Lynch who had written the first-aid material for the Boy Scout Handbook and was in charge of the first-aid department of the American National Red Cross. Longfellow expressed the idea that lifesaving and water safety should go hand in hand with the Red Cross program of first aid.

Meanwhile, officials of the YMCA and the Boy Scouts of America also expressed to Major Lynch the idea that Red Cross might assume some responsibility in lifesaving and water safety. As a result, a committee was formed to outline recommendations for such a project. The committee included Longfellow, James W. West of the Boy Scouts, and Dr. George J. Fisher and William H. Ball of the YMCA. On May 14, 1913, Mr. Ball and Major Lynch met at a YMCA in New York and outlined proposed objectives of the lifesaving corps of the American Red Cross. Both agreed that Commodore Longfellow should provide the leadership for this project. In December the governing body of the Red Cross approved the project and on February 1, 1914, Commodore Longfellow began work with the Red Cross—a work he was to continue until shortly before his death in 1947.

Longfellow's first assignment was in Baltimore, Md., where he organized the first Volunteer Life Saving Corps at the YMCA. The second corps, also in Baltimore, was composed primarily of Boy Scout leaders. From Baltimore the commodore proceeded to other States, taking the message of water safety and forming volunteer lifesaving corps. By the end of 1916 nearly all parts of the Nation had been visited by the representative. Everywhere he enlisted the cooperation of many groups, YMCA's, Scouts, police, and other civic groups, and the military.

World War I gave impetus to water safety training for members of the armed forces, and in many cases proved the value of such training. The YMCA reports many a young man home safely after his ship had sunk made the statement: "My life was saved because I learned to swim in the YMCA pool." Very early in his work the commodore had given demonstrations for navy personnel and civilian employees. With the entrance of this country into the war, he worked extensively in army camps, at naval stations, and with the Coast Guard and Marine Corps giving demonstrations and teaching lifesaving and water safety methods to thousands. In fact, it was here that what later was to become known as survival swimming first got its start—with the commodore's demonstrations of "shirt tail" lifesaving.

Swimming for Women

During this early period opportunity for swimming for women and girls was limited, primarily because of lack of facilities except in the summertime.

However, the Young Women's Christian Association was getting its aquatic programs started with new building programs including pool facilities. The first YWCA pool had been built in 1905 and from the beginning swimming had always been considered an important part of the organization's physical education program. By 1954 there were 132 pools.

In 1912 the Girl Scouts got under way and from the beginning expressed interest in aquatic activities. The first handbook, published in 1917, included advice on supervision and training for swimming and boating.

Primarily through the efforts of the commodore, who did not share the opinion of some that women should not be accepted as lifesavers on an equal basis with men, some two or three thousand women were qualified as lifesavers by

Left: A swimming lesson in the early days of the water safety program. Right: A trained instructor teaches youngsters to swim in one of the many modern pools constructed in the past 40 years.

1920. In that year the Red Cross recognized women as members of lifesaving corps and by 1921 women were accepted as members and examiners on the same basis as men.

Following the war, interest in swimming increased steadily—as it has to the present day. Many new pools were being added, not only by the YMCA and the YWCA, but also by boys' clubs, Jewish community centers, service clubs, schools and colleges, recreation departments, and other community groups. At the same time, greater awareness of the health and safety problems was being expressed by local communities and gradually natural swimming places were improved for recreational purposes. As transportation methods improved, accessibility of swimming spots naturally resulted in greater interest in aquatics for recreation.

While the popularity of swimming climbed steadily in the ensuing years—the drowning rate steadily declined. According to the National Safety Council publication, Accident Facts, 1953 edition, the drowning rate average in 1913–17 was 8.8 per 100,000 population. By 1927 the average had dropped to 6.4 and by 1952 it stood at 4.4.

Widening the Program

While initially the efforts of the Red Cross, and to some extent that of other organizations, had been primarily in lifesaving, it soon became apparent that a more basic need existed—to teach more people how to swim so aquatic accidents could be prevented. As more and more recreation areas opened up, a new need became apparent—the need to reach more people with training and information on safety in operation of small craft. Whereas such activity had been included for many years in private and organizational camping, the popularity of small craft took a big jump following World War II. As a result, many organizations increased their educational efforts in this field.

Today there are countless groups, national, State, and local, concerned with the problem of death by drowning and making an effort to plan safer, healthier aquatic recreation for Americans. The following is a brief summary of the objectives and programs of the major national organizations concerned with a direct program of education in water safety. Most of these organizations publish educational materials—texts, pamphlets, posters, and the like. Details of materials available can be obtained by writing to the specific organizations.

American National Red Cross. Objectives: To reduce drownings by teaching people how to be safe in, on, or near the water, to perform rescue, and to give assistance in case of accidents. Operates through local chapters in cooperation with other groups. Does not operate facilities. Offers graduated courses in swimming, from beginner through advanced, open to persons of all ages; junior lifesaving for boys and girls 12 to 15 years of age; senior lifesaving for men and women 16 years of age or older; survival swimming for persons 16 years of age or older; basic courses in boating, canoeing and sailing, open to persons of all ages. Some chap-

ters also participate in cooperative programs of swimming for the handicapped. Courses conducted by trained volunteer instructors. Leadership training conducted by professional field staff and at 10-day aquatic and small craft schools annually in June and August throughout the Nation.

Boy Scouts of America. Objectives: To aid every Scout to be at home in and on the water; to instruct him in self-preservation and to aid others in and on the water; to give Scouts fun in and on the water. Operates through the Scout units (Cub Scout packs, Boy Scout troops, and Explorer units). Cub Scouts are urged to learn to swim progressively with an adult person who can help supervise them. Boy Scouts and Explorers learn through an advancement plan including a 50-yard swim for first-class rank and merit badges for swimming, lifesaving, rowing, and canoeing. Opportunity to become a Scout lifeguard for proficiency in basic aquatic skills and proved ability to use them to aid others. Sea Explorer program includes sailing, navigation, seamanship. Primary facilities are at Scout camps and, in addition, on year-round basis using public and private community pools. Leadership training given through professional staff and at aquatic schools conducted throughout the Nation each June.

Boys Clubs of America. Objectives: To teach boys to swim and become proficient in water skill; to teach lifesaving techniques and skill in handling water craft. Operates through club pools, at summer camps and through use of community resources. Most clubs have aquatic programs. Swimming program based on Boys Clubs of America aquatic tests; lifesaving based on Red Cross junior and senior lifesaving courses. Some clubs offer small craft handling. Utilize aquatic leadership training offered by Red Cross and other groups plus own professional staff.

Girl Scouts of the U. S. A. Objectives: To teach girls to swim and to handle small craft so they are able to take care of themselves in or on the water; to help girls be aware of their responsibility for their own safety and that of others. Operates through Girl Scout troops. Proficiency badge program for Intermediate Scouts includes swimming, lifesaving, boating, and canoeing. Senior Girl Scout troops especially interested in aquatic activities may carry out mariner program, including logical progression for various activities. Opportunity for aquatics available at Girl Scout camps operated throughout the Nation during summer months. Year-round activities utilize private and public schools. Utilizes leadership training offered by Red Cross, plus own professional staff.

National Jewish Welfare Board. Objectives: To offer swimming as a part of the health and physical education program. Health and physical education manual indicates "Swimming is one of three essential things which a father is duty bound to teach his children . . . physiologically, swimming is one of the best forms of exercise." Operates through Jewish community centers and YMHA's having swimming pools, plus day or country camps where there are swimming facilities. Centers without pools utilize community resources in public and private pools. Program includes instruction, recreation and special events. Utilizes Red Cross leadership training and courses.

Young Men's Christian Association. Objectives: Learning to swim for recreation; safety including personal safety as well as attention to fellow swimmers; being useful to others; health and physical fitness. Operates through own pools on year round basis and summer camps. Program includes swimming, lifesaving and water safety, and wide range of water sports, games, and recreational activities. Nearly every YMCA has a professionally trained and qualified specialist in swimming, safety, and lifesaving, prepared to instruct. Provides instruction for personnel of other groups. Provides qualified leadership through professional field agents plus a national aquatic conference held every 5 years. Carries on extensive aquatic research at two YMCA colleges—Springfield and George Williams.

Young Women's Christian Association. Objectives: As a part of health education, to develop a program that will help produce for its members, including staff and volunteers, through individual, group, and community programs, sound health practices, recreational skills and personalities capable of enjoying the creative life. Water safety is a specific objective. Operates through own pools and camps

The Schaefer prone pressure method of artificial respiration, left, was developed in 1903. In 1951 it was superseded by the back pressure-arm lift method, right.

and also pool facilities rented from other organizations. Program includes instruction in swimming, diving, lifesaving, health education, rehabilitation and corrective physical education on a limited scale; water games and contests; water pageantry; synchronized swimming, social recreation, and some small craft. Instructors must have background of good experience in teaching swimming. Most are full-time members of health education staff with degrees in physical education. Also utilize leadership training and courses of other groups.

While each of the above organizations carries out a specific program of water safety education, there are countless other groups, national, regional, and local, which have contributed a great deal toward promotion and public education in water safety practices. It would be impossible to compile a complete list—but it would include many youth groups, civic clubs, governmental units, service clubs, schools and colleges, publicity and advertising media, industries, recreation and safety groups.

Pools operated by municipal recreation and park departments are utilized not only for learn-to-swim programs but for training of lifeguards, instructors, and others. According to the National Recreation Association, there are more than 2,000 municipal pools, most of which offer facilities for education in swimming and water safety. In addition, they provide an opportunity for many persons to swim under supervision of trained lifeguards.

Safety a Common Objective

In many communities the programs of water safety are interrelated—all united in a common objective—to teach more persons to swim and to practice safety while in, on, or about the water.

To carry this idea of cooperation even further, the Conference for National Cooperation in Aquatics is working nationally and locally to extend aquatic programs. The organization includes not only those already listed but also the following groups having a direct interest in aquatics: American Association for Health, Physical Education, and Recreation; American Camping Association; American Recreation Society; Athletic Institute; Committee on Relationship with the Armed Forces; Amateur Athletic Union of the United States; National Collegiate Athletic Association; National Federation of State High School Athletic Associations; National Recreation Association; National Safety Council; National Social Welfare Assembly; United States Office of Education; and Women's National Aquatic Forum.

The purpose of the conference, as outlined in a report of the third annual meeting last October, is to provide a setting in which national

organizations, which have a membership constituency, conduct aquatic programs, have equipment to operate, employ professional practitioners, and use volunteer (and semiprofessional) leadership, can come together occasionally to share and discuss common problems, report on individual agency programs, and plan ways of working together on agreed-upon projects. It is hoped that this planning and working together will bring understanding between agencies and serve a greater number of people more effectively. At the recent meeting main subjects of discussion included "operation cooperation," a project of local cooperation; a plan of operation to conduct a clinic to train judges of synchronized swimming; a plan of operation for conducting a clinic to train judges of diving; and small craft safety.

The idea of cooperation is not new. YMCA's, YWCA's boys' clubs, municipalities, and other groups operating pools have long offered their facilitates for use by other groups and for community learn-to-swim programs. School and college facilities also are often utilized for communitywide activities. However, the CNCA has helped to cement this spirit of cooperation into active programs that should help the efforts of all groups to be more effective.

The need for water safety education exists in every community. Many persons who may not have an opportunity to participate in aquatics in their own community spend some time each year at beaches, pools, lakes, or streams where they are exposed to possible hazards. A steadily increasing number of persons are using small craft, especially in areas where large lakes have been created as a result of power and other projects. In fact it is estimated that nearly 100 million Americans use swimming or small craft facilities each year.

It would be virtually impossible to estimate the exact number of persons who have learned to swim, or who have learned lifesaving through the years. But it is certainly safe to say that well over 15 million persons have been trained in some aspect of swimming and lifesaving and that millions more have been reached with some information and instruction on water safety.

Every group has in its files countless incidents of the effectiveness of this training—of persons young and old who have saved lives because they knew how to make a rescue, how to give artificial respiration, and how to give some kind of assistance to someone in trouble. Less dramatic, but equally important, are the thousands of accidents that never happened because people knew how to swim and knew the basic principles of safety in the water.

Despite the fact that the rate has been cut in half, drowning is still a major cause of accidental deaths. More than 6,000 persons die as a result of drowning each year—about half in swimming accidents and about half in other types, including a large percentage involving small craft. Among persons 5 to 34 years of age, drowning ranks as the second leading cause of accidental death.

Obviously, there is still much to be done. While formal teaching programs may not always be possible because of lack of facilities, much can be accomplished through widespread public education. Many organizations already carry on effective programs using demonstrations, posters, pamphlets, movies, and various publicity media.

With the help of all those who are interested in the health and safety of Americans, the dream of Commodore Longfellow may yet be reached: "Every American a swimmer; every swimmer a lifesaver."

PHR

The Stress Disorders and the Industrial Physician

By WILLIAM P. SHEPARD, M.D.

How damaging is work? What produces stress? Contending that "work per se is not necessarily harmful," an industrial physician considers these questions and assigns to his profession a major responsibility for "evaluating occupational stresses and assaying the degree of tolerance of the human material" and preventing and curing the stress disorders.

THE STRESS disorders have been variously listed as nervousness and neurosis, arthritis, overweight, high blood pressure, gastric and duodenal ulcer, gout, coronary disease, asthma and bronchitis, and many others (*1*). They are frequently brought to our attention dramatically in the press as sudden death from "heart attack" or "stroke." Occurring in relatively young people, especially business executives, they are almost always attributed to the stress of overwork. To a considerable degree, all the stress disorders tend to be attributed to the strains of occupation (*2–4*). One wonders if this tendency has not been exaggerated and if perhaps physicians themselves are not inclined to overemphasize the physical and mental damage of work.

The relationship of work to the stress disorders is one of several problems for which the industrial physician must assume a major responsibility. He, more than any other physician, must lead the way in studying the etiology, pathology, diagnosis, therapy, and prevention of the stress disorders. It is the purpose of this brief paper, therefore, to discuss some of the foundation stones upon which a program to meet this responsibility may be built.

Dr. Shepard is the vice president for health and welfare of the Metropolitan Life Insurance Company. *He presented this paper at the medical conference of the 18th annual meeting of the Industrial Hygiene Foundation of America, which was held at the Mellon Institute, Pittsburgh, Pa., November 18, 1953.*

How Damaging Is Work?

Carey McCord (*5*) has said that "a little bit of man" goes into every job and that every worker thereby suffers some attrition because of pardonable pride in his own workmanship. Nevertheless, there is much good to be said about work, and perhaps too much bad has been said. In the words of Emerson, "Man doth not live

by bread alone, but by faith, by admiration, and by sympathy." Who is more fortunate at any age than the one who has faith in the importance of his job, admiration of his fellows for a job well done, and sympathetic consideration by his superiors and fellow workers? Personnel experts tell us that job satisfaction is essential to a good worker. How often has each of us seen the man who has been deprived of his job decline rapidly, both physically and mentally, because he finds nothing left worth living for?

It might be wise, therefore, for those of us who have an opportunity to guide the medical destiny of industry to be a little cautious in attributing all the so-called stress disorders solely to occupation. My contention here is that work per se is not necessarily harmful. Many of the so-called stress diseases have nothing to do with stress, and many of those related to stress may not be related to work. They may be the results of accident, including infection; or of the kind of nervous system with which one is endowed; or of the inexorable aging process which begins at birth; or of improper habits.

What Produces Stress?

Stress comes from the Latin "strictus," the past participle of "stringere," which means to bind tight. Stress means to subject to the action of external forces, especially to overstrain. To the engineer, it means mutual force or action between contiguous surfaces or bodies caused by external force, as tension or shear, commonly expressed as pounds per inch.

Engineers deal extensively with stress in materials of many kinds, and we may learn something from them. Limits of stress are known as the breakpoint at which the material under observation disintegrates or fractures. The factor which withstands stress is called tolerance. Tolerance to increasing degrees of stress is what the engineer wishes to measure before he decides the appropriate use of a given material.

The industrial physician's responsibility to industry is somewhat similar. He must try to evaluate the stresses of occupation and to assay the degree of tolerance of the human material. His objective, like the engineer's, is to avoid imbalance so that no substantial damage is done.

It is difficult to evaluate the tolerance of the human organism because of enormous variation between individuals. It is almost equally difficult to evaluate the degree of occupational stress since "one man's meat is another man's poison." Nevertheless, the industrial physician must do his best. Determining the balance between stress and tolerance is one of his greatest contributions to industry, and one of his greatest challenges. There are no other skills available to industry which equal his in this area. Because of the importance of this task, the physician must proceed objectively and in accordance with the tenets of his scientific training, never forgetting that the art of medicine, in addition to its science, is as important in industry as in all other forms of medical practice.

The Physician's Assay

In order to exert his best professional judgment based on years of training and experience in this question of stress versus tolerance, the physician must first have thorough knowledge of the material at hand, in this case human material. He must understand each individual's points of weakness and his points of strength. He must try to judge whether for the particular individual under observation increased responsibility is a burden or a joyous challenge.

Physical points of weakness, such as visual and hearing defects, flat feet, deformities, diminutive size, and weak muscles are fairly easy to assay and record. It is equally important, however, for the physician in industry to make some estimate of the individual's psychological weaknesses and strengths. This obviously requires some psychiatric orientation, with a full appreciation of the many psychosomatic disorders which may develop as a result of the many types of mental conflict. Among the commonest of these, which the industrial physician must try to understand, are the stresses and strains arising in the home and family.

Second, the physician in industry must have a thorough knowledge of the various stresses inherent in certain jobs. Whether it be in terms of the number of pounds a man can safely lift

in loading a cargo, or the number of complex problems a top executive may safely take on without becoming upset and frustrated, the industrial physician is by training and experience best qualified to detect the early signs of the individual's breakpoint.

Industrial Physician's Tools

In approaching this task of determining the balance between stress and tolerance in the human organism, the industrial physician has a well-equipped armamentarium.

Periodic Health Examinations

The periodic health examination is one of his most important tools. The technique of this examination and its importance need not be labored here. Suffice it to say that the examination must be good, that is, it must be as complete as may be necessary under the requirements of the individual case. A careful history, beginning with the question, "Is there anything you'd like to tell me?" is essential. It would seem that the skilled physician who has full knowledge of the stresses under which the individual labors might find many who could be examined in a matter of hours. He also might find some who need much more attention than that.

A second tool, closely related to the first, is health education. He who is skilled and experienced in this field has not lost sight of the teachings of one of our greatest exponents of the periodic health examination, Dr. Eugene Lyman Fiske (*6*), who showed that counseling, that is the unhurried discussion, which follows the health examination is fully as important as any other part. This is the time and place for the physician in industry to take full advantage of the time at his disposal and, more importantly, of the many health educational devices now available to impress the examinee with the significance of each of the findings on his physical examination and precisely what he should do about them.

Some industrial medical directors display considerable originality in this important component of the periodic health examination. One has a small slide projector on his desk with slides illustrating the more common lessons to be taught. Another amuses, but also impresses, his executives' monthly meetings with clever poster cartoons showing the effects of overweight, overexercise, oversmoking, and other excesses. It is encouraging to note that in 1 or 2 medical schools, at long last, students in their senior year are being taught the art and science of health education in their dealings with the patients.

If anyone thinks there is no room for improvement in this field, let him interview the average dispensary patient as he leaves the physician's office, starting the interview with the question, "What did the doctor say?" There is surprise in store for the interviewer when he learns what the patient thought the doctor said.

Science and Art

Third is the physician's clinical judgment. Although his judgment is not as accurate as the judgment exercised by the engineer after he has tested strains and tolerance in a piece of inanimate material, there is no substitute for the experience and judgment of the industrial physician who has learned all he can learn about the strengths and weaknesses of the piece of human material before him and who has studied carefully the types of stress imposed by that individual's job. No one else in industry or elsewhere has this judgment, and no physician in industry or outside can afford to fail to develop it to the utmost degree.

Finally, among the unique items in the industrial physician's armamentarium is what we must still call the art of medicine. This art is exercised to a great degree in the physician's skill in health education, and the success of the physician here can be measured by the degree to which he has been able to persuade the patient to do the things which are best for him. Under the art of medicine, rather than the science, the physician will himself be tolerant with the decisions of the individual, recognizing that some may prefer to take a calculated, or even an unknown risk, rather than to change their habits, undergo surgery, or shed responsibility. Once the intelligent individual, especially the executive, has the facts well before him, it is his decision to make, and the physician must respect it.

Conclusions

From this brief examination of the stress disorders, we might conclude that:

1. The stress disorders are varied, often nebulous, and always important in industry, especially with executives.

2. They are not always occupational in origin; work per se is not necessarily harmful.

3. The stress disorders are the result of a maladjustment somewhere: too much stress, too little tolerance.

4. They are easier to prevent than cure.

5. Their prevention and cure is one of the industrial physician's most important responsibilities.

6. Fortunate is the worker, especially the executive, who, with or without the physician's help, can learn to pace himself for the long pull, adjusting his speed to his load, learning to lighten his load by delegating responsibility to well-chosen subordinates; and who has a high tolerance to pressure from a master above, be that master a foreman, a board of directors, or his own distraught conscience.

REFERENCES

(*1*) Alvarez, W. C.: How to care for the health of executives. Chicago, Wilcox and Follett Co., 1951, 39 pp.

(*2*) Schweisheimer, W.: Standard Oil studies executive health. American Business 22: 12–13 (Dec. 1952).

(*3*) LaCerda, J., and Ramsey, M. A.: Where brakes are put on breakdowns. Nation's Business 38: 43–45, 72–73 (July 1950).

(*4*) Ross, W.: Keeping the boss alive. Esquire 40: 109, 158–159 (Oct. 1953).

(*5*) McCord, C. P.: A blind hog's acorns. Chicago, Cloud Inc., 1945, pp. 95–98.

(*6*) Fiske, E. L., and Crawford, J. R.: How to make the periodic health examination. A manual of procedure. New York City, Macmillan Company, 1927, 393 pp.

Conference on College Health

The Fourth National Conference on Health in Colleges was held in New York City May 5–8, 1954. Meeting to consider ways of improving the health of college students were 46 national health and education organizations, including the Association of Schools of Public Health, the American Public Health Association, the American Medical Association, and the American Hospital Association. Among the Federal agencies represented were the Public Health Service and the Office of Education of the Department of Health, Education, and Welfare, and the Bureau of Human Nutrition and Home Economics of the Department of Agriculture.

Reports of committees considering college health problems will be published, and will set standards for the next decade. The earlier conferences were held in 1931, 1936, and 1947.

A panel of chief executives of American colleges keynoted the conference. "The President Looks at the College Health Program" was discussed by Nathan M. Pusey, president, Harvard University; Sarah G. Blanding, president, Vassar College; Henry T. Heald, chancellor, New York University; William E. Stevenson, president, Oberlin College; and Frederick L. Hovde, president, Purdue University. J. L. Morrill, president of the University of Minnesota, presided.

Environmental Medicine in Industry

By C. RICHARD WALMER, M.D.

ENVIRONMENTAL MEDICINE in industry may be defined as a specialized form of medical and public health practice which combines with medicine the sciences of engineering, chemistry, toxicology, psychiatry, sociology, statistics, and health promotion. It has as its objective the improvement of physical and mental efficiency of the worker through the application of these sciences to both the worker and his industrial environment. The results should be measured in increased production and better products.

Functions and Benefits

Among the functions of environmental medicine in industry are physical and mental examinations to determine the fitness of the worker to do a particular job, remedial measures to restore his health and working ability when he sustains occupational injury or illness, preventive procedures to reduce the possibility of such injuries and illnesses, and education to promote and improve his health and general well-being. Environmental medicine, industrial hygiene, accident prevention, workmen's compensation laws, and various health benefit plans all work together to achieve the goal of physically and mentally healthy workers. In addition, many industrial management components have a secondary, but nonetheless vital, concern with industrial health. These include supervision, job placement, inplant feeding, labor relations, plant security, and various aspects of engineering and purchasing. And the interest of management in industrial health should be shared by the worker, the community, and the entire Nation.

An effective environmental medical program in industry is, of course, beneficial to the employee, the employer, and the community. To the employee, poor health means loss of wages, a reduced period of useful and productive capacity, and the need for making arrangements to provide for himself and his dependents when income fails. Ill, injured, or improperly placed employees mean loss of service, decreased efficiency, low morale, and increased manufacturing cost to the employer. To the community, all of these factors mean decreased prosperity, increased welfare costs, and perhaps labor strife.

Industry generally has been rather slow to realize that environmental medicine can be a potent force and an important focal point in the development of a successful industrial relations program. More visits are made by employees

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Dr. Walmer has been managing director of the Industrial Hygiene Foundation of America, Mellon Institute, Pittsburgh, Pa., since 1951. He was medical director of the foundation for the preceding 5 years, and from 1941 to 1946 he was consulting toxicologist and an administrator in the medical department, Westinghouse Electric Corporation, Pittsburgh. *He presented this paper at the meeting of the Medical Advisory Committee of the National Fund for Medical Education with the Council on Industrial Health of the American Medical Association, December 8, 1953, in Pittsburgh.*

to the plant medical facility than to any other segment of industrial relations with the possible exception of the inplant feeding service. Appropriate physical surroundings in the medical department, capable medical personnel, and efficient medical service promote confidence in the company on the part of employees and of applicants for jobs. In fact, the applicant for a job forms much of his first impression of the company during his pre-employment examination, and the sick or injured employee is particularly impressionable during his visits to the medical facility. The attitude of both toward the company can be influenced tremendously by the way the medical department receives them. For this reason, hardly any other component of the company has a comparable opportunity to demonstrate directly the company's industrial relations and to influence the attitude of the worker.

The Industrial Physician

The success of the medical program will depend largely upon the manner in which it is organized and administered. The industrial physician needs to be more than a good clinician. As a matter of fact, he must have qualifications and training which most good clinicians do not have. For example, he must be an extremely able administrator, and he must have the ability to fit into an organization and work with people. The industrial physician must have an understanding of production problems, the principles of management, and the essentials of personnel work. His clinical knowledge must include a great deal which the average physician in private practice does not ordinarily need to know, such as toxicology and the recognition of hazards in the industrial environment. The physician concerned with environmental medicine in industry cannot make a proper preplacement examination unless he is familiar with the job, its physical demands, and its inherent hazards, as well as the physical capacities and limitations of the employee.

In other words, the industrial physician needs a working knowledge of chemistry, engineering, psychology, and business administration, as much as he needs clinical acumen. He practices a broad specialty rather than a narrow one, and, unlike other specialists, the more training he gets, the broader are his horizons and the more capable he is of coping with industrial problems incident to working man.

Environmental Medicine Activities

The objective of environmental medicine in industry is accomplished through activities which may be roughly classified as follows: (*a*) evaluation of the employee's physical and mental condition, (*b*) maintenance of health, (*c*) provision of medical and surgical care for occupational illness or injury, (*d*) control of the environment, and (*e*) research.

The physical and mental evaluation of the employee is based on and derived from the various applications of the medical examination. Thus, the preplacement physical examination, which should also include a mental or psychometric evaluation, is the basis upon which rests the proper selection and placement of potential workers. These examinations provide a baseline for comparison with future examinations of the same individuals and direct attention to minor physical defects which can be corrected before they become serious. They also do much to safeguard the health of fellow employees and to promote an understanding of the value of good personal hygiene. Experience has demonstrated that healthy persons, properly placed, are more productive, safer, and more contented employees. Confused or ill employees have poorer judgment and are more prone to accident. They have a delayed reaction time to stimuli and may frequently miscalculate distances and speed, resulting in a decrease of their efficiency.

The physical examination also plays a prominent part in health maintenance. For this purpose, examinations are made at intervals depending upon the age of the employee, the hazards to which he is exposed, and any previous pertinent findings with respect to his general health. They are adjusted in scope and detail according to the need of each particular person. Probably as important as the examination itself is the opportunity which the program provides for the physician to counsel the employee and for the worker to have an opportunity to present his problems to the physician. More

can often be accomplished in the way of health maintenance by these informal and direct discussions than by group instruction or classroom techniques. Of course, such techniques and devices as bulletin boards, posters, articles in the company publication, and group discussions accompanied by visual aids are also used.

Medical and surgical care must be prompt and adequate in order to deal properly with on-the-job emergencies which arise from time to time. Here again the industrial physician's training must be such that he will recognize illnesses which may have their origin in the work environment. Just as important, he must know when an illness is not to be ascribed to the effects of materials with which the patient comes in contact. Probably his ability to refer patients to the most able consultants and to evaluate the work of such specialists is more important than his own clinical ability.

Environmental control, or industrial hygiene, requires the assistance of trained personnel, but the physician must be able to understand and utilize this help. The physician need not attempt to be an industrial hygienist, but a good industrial physician must know how the industrial hygienist can help him and when to call upon the hygienist's services. The physician should have a general knowledge of the physiological effects of heat, noise, and fatigue, and he should be entirely familiar with the effects of toxic gases, dusts, fumes, and vapors.

To direct its energies properly and to keep constantly alert to changing situations, environmental medicine in industry must engage in research. It may not engage in fundamental research on its own, but it should at least utilize the services of research organizations so that it will know, for example, the toxic potentialities of the substances or products for which it is responsible. The applied research activities may be simply statistical or epidemiological analyses of the cases coming to its attention so that it may direct its energies to the proper channels.

Prognostications

As a result of its research, as well as of the other activities outlined, environmental medicine in industry tomorrow will progress, I am sure, to the point where the medical department will be recognized as a positive part of the industrial organization. It will be regarded as a part of the production team, and its assistance will be sought, not after some difficult situation has arisen, but in the planning stage, with a view toward prevention of trouble by a careful utilization of forethought and design.

I believe that in the future environmental medicine will be utilized for the protection of the thousands of workers in small plants who today do not have the benefit of such programs. Nearly two-thirds of our industrial workers are employed in plants having fewer than 500 employees, and such plants constitute over 98 percent of the Nation's industrial establishments. These small plants cannot individually establish complete medical departments or environmental health programs. Some way must therefore be found to provide them on a cooperative basis. Even so, the burden of this type of environmental medicine will fall upon the private practitioners, many of whom do not regard themselves as being in any way connected with environmental health. Yet, a recent poll by the American Academy of General Practice indicated that 90 percent of its membership considered that they do some "industrial practice."

This is evidence of a real need for education on the postgraduate level. Some method must be devised whereby the general practitioner can obtain a fundamental knowledge of environmental medicine, particularly as it applies to industry, which will not interfere with his daily practice and will not take an inordinate amount of his time. The various State committees on industrial health, the American Academy of General Practice, and the schools with organized courses in environmental medicine are ready to answer a part of this problem, but, in the long-range view, a working knowledge of industrial medicine as a part of the undergraduate curriculum will do much to prepare the general practitioner for the important part he must play in environmental medicine in industry.

The Social Service Fair In El Paso, Texas

By Alice P. Barry, B.A.

A LITTLE GAYETY—perhaps even a touch of the amateur carnival—cannot hurt social work. This has been the experience of El Paso, Tex., with four annual social service fairs—in 1950, 1951, 1952, and 1953.

The sheriff of El Paso for some time had been seeking opportunities for coordinating the work of the community's law enforcement agencies and welfare groups. In preceding years, he had invited the Central Council of Social Agencies to display exhibits at annual meetings of police officers' and sheriffs' associations. Out of these grew the idea and realization of the El Paso Social Service Fair where each health and social service agency annually brings to the public a vivid picture of its individual activities.

Planning the Fair

Taking into consideration most communities' general disinterest in welfare activities, it was proposed to hold the first social service fair out-of-doors in the central plaza, where the individual exhibits would be accessible to everyone. It seemed unwise to use a hotel or hall. The plaza is a park, crisscrossed by walks, the size of a city block, and in the very heart of El Paso.

By an overwhelming majority vote, the fair was launched at an organizational meeting of social service agency representatives held in April 1950. A chairman and a program committee were chosen. Arrangements were made later with the city for using the plaza and for the assistance of the city park department. The Central Council of Social Agencies sponsors the event. All its members, and many other groups with social service functions, such as the Providence Memorial Hospital, the Altrusa Club, and the San Juan Civic Recreation Center, participate in the fair.

The first fair was held the last Saturday in August, before the opening of school, when many shoppers might be expected to be on the streets. The day proved to be too early in the season, however, and the next fairs were held on the second Saturday in September.

To avoid damage to the grass and to spare local merchants the expense of donating lumber, the individual displays are placed upon card tables supplied by each participating agency. If backstops are needed, supporting poles are tied to table legs, and board or canvas is stretched between the poles. Screens also are set up where desired.

Every July, the council mails to its member agencies and the other participating groups a form request for exhibit information; this elicits the name of the agency, the type of exhibit, the need for electricity, the amount of space required in terms of 1, 2, 3, or 4 card tables, and the name of the person who will represent the agency at the fair. It has proved essential for each agency to have in charge of the exhibit a well-informed person who can answer questions about the agency's activities. Board members frequently perform this service.

The week before the fair, a post card is sent to every agency, identifying the exact location of the exhibit space. At a meeting shortly before the fair, the participants receive their last-minute instructions and locate their exhibit space on a blackboard diagram. This meeting stimulates enthusiasm and also helps to anticipate needs.

Mrs. Barry has been executive secretary of the Central Council of Social Agencies, El Paso, Tex., and executive secretary of the El Paso Social Service Exchange since 1943. Chosen First Lady of El Paso in 1946, she has been a spirited leader in many of the community's social service organizations.

Exhibits at the El Paso Social Service Fair.

At no cost to the council, the city park department strings colored lights across the plaza so that the exhibits are well lighted and colorful during the evening. All electrical connections and wiring are installed by a licensed commercial firm, paid by the council. The park department provides a platform and a public address system, and the program committee provides a piano. On request, the city police department cooperates by keeping a street on one side of the plaza free for unloading and loading exhibits and by placing a police officer on duty in the area. An information booth is set up at the small central pond.

The hours for the first two fairs were from 9:00 a. m. to 9:00 p. m. In the third year, the fair closed at 8:00 p. m., and in 1953, at 7:30 p. m., because experience had shown that too few people came during the later hours.

The Day's Events

The fair is formally opened at 10:00 a. m. by the council's president with a short ceremony at which the mayor, the county judge, and the superintendent of parks speak briefly.

Three groups of Boy Scouts are assigned to morning, afternoon, and evening shifts (8–12 noon, noon to 4 p. m., and 4–8 p. m.) to guide the visitors, run errands, and help in setting up and closing exhibits. Each boy has a map of the ground which he turns over to his relief when he goes off duty.

As in other fairs, the exhibits are supplemented by entertainment. A continuous program illustrating each agency's function, especially group work activities, runs throughout the day. Most of the talent comes from the participating agencies.

At the most recent fair, for example, day nursery children did a folk dance, and another nursery group sang rhythm songs. The children's home put on a play. YMCA boys put on boxing and tumbling matches. Boy Scouts, Girl Scouts, YWCA girls, the city recreation department, and the settlement houses furnished other entertainment. The most dramatic act was put on by fencing teams from the Catholic Community Center.

Volunteer announcers from three local radio stations introduce the acts; one directs the morning program; another, the afternoon program, and a third, the evening program. Each is assisted by a script which outlines the acts of each agency and gives the facts about the agency, the performers, and the performance. Music from a record player with a good amplifying system, operated between the acts, helps to draw shoppers to the fair.

Type of Exhibits

Agencies have learned to display picturesque presentations of their work rather than to rely on cards, albums, and the type of poster which fails to excite interest. An agency does not

have to go to any more expense than it chooses. With most, it is the ingenuity of the exhibit which draws attention. The Lighthouse for the Blind exhibit always has a crowd, watching the blind workers cane chairs, stitch aprons at the sewing machine, and weave rugs on the hand loom.

The health department booth shows some of its clinic, sanitation, and laboratory services. Public health nurses are at the booth.

At the first fair, there were 40 exhibits from public and private agencies, including the welfare, health, and other community public agencies and the several clubs carrying on welfare projects, such as the Optimists, the Lions, and the 20–30 Club. The second year, there were 58 exhibits. There were 62 in 1952, and 62 again in 1953.

The El Paso Tuberculosis Association brings its mobile X-ray unit into the plaza, and each year the unit has taken an average of 250 chest X-rays of people who probably would not otherwise have been checked. In 1953, the El Paso County Medical Society Auxiliary fitted up a trailercoach for its nurse-recruitment program, and it obtained several applicants. These and similar projects are advertised over the public address system at program breaks. Community Chest organizations display the "red feather" on their tables.

Several local agencies with national affiliations, such as the local office of the Veterans Administration, the El Paso Heart Association, and the El Paso Planned Parenthood Center, have used exhibits supplied by their national headquarters.

By vote of council members, the only sales permitted at the fair are the orders taken for products of the Lighthouse for the Blind and the soft drinks sold at the booth set up by the city concessionnaire. The concession donates 15 percent of the gross sales from the soft drinks toward fair expenses. The total cost of the fair to the council has been about $125 annually.

The fair has proved to be a tourist attraction, also. Attendance in 1953 was estimated at 6,000 to 7,000. The annual event, which is not an excessive burden for anyone, stimulates public understanding and sympathy and sustains the enthusiasm of the agencies for their larger purposes.

Use of Microcard Reader

The Robert A. Taft Sanitary Engineering Center library uses the microcard reader to save space and money. The device utilizes standard 3″ x 5″ cards as microcards. Each card contains an average of 50 to 60 pages of a publication. One hundred microcards take 1 inch of space and contain the equivalent of 1 foot of books.

The microcard, when inserted into the reader, is magnified 26 times or slightly more than its original size. The reader is not much larger than a typewriter and weighs 21 pounds.

One microcard copy of a 500-page volume, 8 cards, costs about $11.20. It has been estimated that 800 volumes of a periodical, bound and stored for 50 years, incurs a cost of $425. The same periodical purchased on microcards could be stored for 50 years for $127.

For interlibrary loan purposes, microcards are much easier and cheaper to pack and mail than books. In addition, a book is not in danger of being lost or damaged when microcards are sent in its place.

The House Mouse And Murine Typhus In Mississippi

By WILLIAM W. SMITH, Ph.D.

MURINE TYPHUS, a rickettsial disease endemic in Mississippi as well as the other southeastern States, was first noted by the Mississippi State Board of Health in 1917 when 9 cases were reported from the delta counties. There is some doubt as to the authenticity of these cases, and no others were reported until 1933. With the exception of 2 years, the number of human cases rose annually from that date until a peak of 235 cases was reached in 1945. Annual rat poisoning campaigns and ratproofing measures conducted by many cities of the State reduced economic damage but were not successful in preventing a continuous annual increase in cases reported. When DDT became available for use by the Public Health Service and the State health departments in 1945, it gave promise of genuine control of this disease by controlling the chief arthropod vector, the oriental rat flea (*Xenopsyllacheopis*), when applied as a dust to the runways, nests, burrows, and other habitats of domestic rats (*Rattus norvegicus*, *Rattus rattus alexandrinus*).

Previous Control and Survey Work

Cooperative DDT dusting campaigns were initiated by the Mississippi State Board of Health and the Public Health Service in 1945, and the decline in the number of murine typhus fever cases after that date is believed due chiefly to these campaigns. Periodic rat-trapping, collecting, and testing of rat blood serums for the presence of murine typhus antibodies and collection and identification of rat ectoparasites constituted an integral part of these typhus control programs. The murine typhus fever cases reported in Mississippi during the period 1933–49 follow:

Year	Cases reported	Year	Cases reported
1933	1	1942	59
1934	0	1943	132
1935	5	1944	178
1936	6	1945	235
1937	15	1946	127
1938	25	1947	64
1939	49	1948	42
1940	51	1949	12
1941	65		

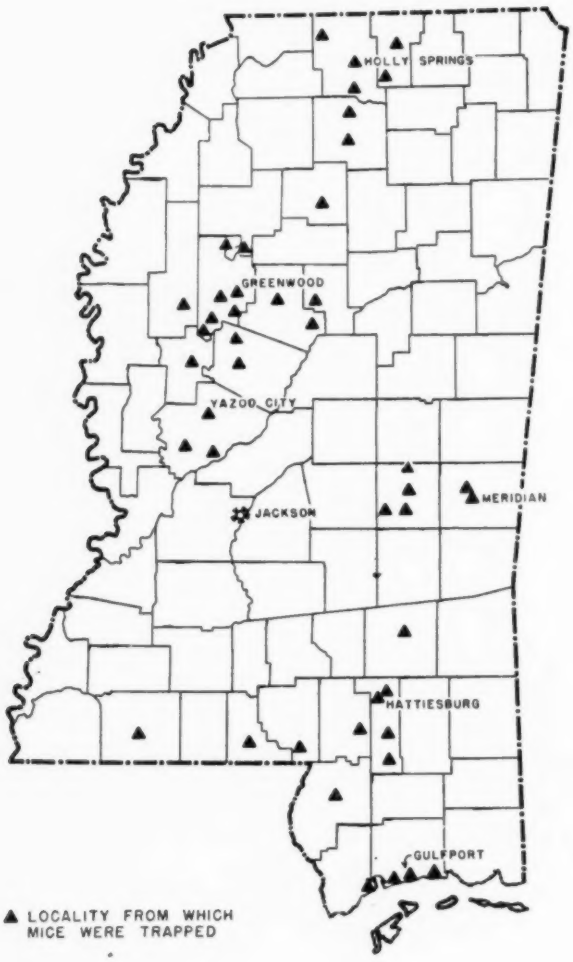
The information obtained served to locate murine typhus foci in the State. A survey conducted in 1946 and 1947 showed that the disease was confined chiefly to the part of the State south of Jackson and revealed the towns and counties where most emphasis should be placed on typhus control work. By 1949 few typhus foci could be shown among rats anywhere in the State, and intensified poisoning attempts had greatly reduced rat populations. However, these efforts had been directed at the control of domestic rats and apparently had left house mouse populations intact. Often house mice increased as rat populations were reduced, probably because of lessened competition for available food. differences in control measures required, and other factors.

Aims and Objectives

It seemed desirable to determine the importance of the house mouse as a possible reservoir of murine typhus and the importance of its ectoparasites as compared with the ectoparasites of the domestic rats. The house mouse is at least as widespread in distribution as is the domestic rat and is even more intimately associated with man in the regions where murine typhus is found.

Dr. Smith, a medical entomologist with the Public Health Service since 1943, is presently assigned to the Communicable Disease Center Technology Branch, Newton Field Station Unit in Georgia. *This paper is adapted from a thesis presented to the Tulane University of Louisiana in partial fulfillment of the requirements for the degree of doctor of philosophy.*

House mouse survey in Mississippi, July 1, 1949, to June 30, 1950.



Methods

A house mouse survey of 1 year's duration (July 1, 1949, to June 30, 1950) was planned cooperatively by the sanitary engineering division of the Mississippi State Board of Health and the Public Health Service as a part of the typhus control program.

House mice were trapped from six regions of the State. The headquarters for these regions from north to south in the State were located as follows: north central, Holly Springs; northwest central, Greenwood; west central, Yazoo City; east central, Meridian; south central, Hattiesburg; southeast coastal, Gulfport (map). With regard to isothermal zones, the north central, northwest central, and east central regions are within the 60° to 65° F. zone, while the south central and the southeast coastal regions are in the 65° to 70° F. zone. The west central region lies on the boundary between the two zones. Very few human typhus cases have occurred in the more northern temperature zone of the State.

Trapping was conducted in four types of indoor habitats classified as "food-handling establishments," "other business establishments," "farms," and "residences." These were chosen as inclusive of most situations in which mice were in close association with man. No mice were trapped outdoors, but at the approach of cooler weather in the fall mice were observed to appear in residences from which they had been absent during the summer.

Live traps of the type used in a rickettsialpox survey in New York (*1*) were utilized. Ten to 15 traps were set per station during the late afternoon, usually on 1 day of each week. They were collected early the following morning, and the mice were taken to the laboratory in the traps. Each mouse in turn was anesthetized and killed by bleeding from the heart. Blood obtained from several specimens from the same habitat was pooled (range 1–5 mice per pool, average 3.4 mice per pool) to supply sufficient serum for testing after centrifuging. Serums were collected in sterile vials in which merthiolate crystals had been deposited for bacteriostatic effect. The vials were mailed to the Public Health Service Communicable Disease Center Laboratory at Chamblee, Ga., where the serums were tested for the presence of murine typhus antibodies.

Survey Findings and Discussion

Bloods from 995 mice composed the 294 serum pools successfully tested. Only 1 serum pool was found positive for the antibodies of murine typhus (see table). The positive pool was obtained from two mice trapped in a barn near Sandy Hook (Marion County) in the south central region. This particular barn had harbored typhus-infected rats for several years.

Results of complement fixation tests of pooled house mouse blood serums for typhus fever in Mississippi, by months

Year and month	Positive	Negative	Unsatisfactory	Total
1949				
July	0	7	2	9
August	0	8	17	25
September	0	33	21	54
October	1	19	23	43
November	0	17	13	30
December	0	16	6	22
1950				
January	0	13	14	27
February	0	34	3	37
March	0	39	4	43
April	0	43	7	50
May	0	48	11	59
June	0	16	12	28
Total	1	293	133	427

The low titer of the serum, 1:8, is believed to reflect the last remnant of the typhus infection in rodents at this location. Attempts were made to obtain mice from all the premises known to harbor rats with positive titers, but it was possible to obtain samples from only 7 of 13 such premises. Usually the number of mice obtained was small, and positive mice may have been missed. However, 1 positive serum from the 7 premises known to have had positive rats recently is of considerable significance. These findings suggest that where ranges of house mice and domestic rats overlap, some of the mice are likely to be infected if the rats are typhus-positive.

The percentage found positive here (0.34 percent) is low compared with percentages of house mice found positive elsewhere by other workers (*2–4*). In this instance it should be remembered that in Mississippi mice which actually had a chance for exposure to infected rat ectoparasites were trapped from premises where intensive DDT dusting had been conducted annually for several years.

It was concluded that the house mouse is of little importance as a reservoir of murine typhus in Mississippi at present and that it is of possible importance only where its range overlaps that of infected domestic rats.

Summary

Mississippi is one of the southeastern States in which murine typhus is endemic. A peak of human cases (235) was reported in 1945—the disease had been present and had increased since 1933. The great decrease in the number of cases since 1945 is believed due chiefly to the DDT dusting campaigns conducted by the Mississippi State Board of Health, the Public Health Service, and the cities and counties in the southern part of the State. The wide distribution of the house mouse and its close association with man suggested the desirability of evaluating its importance as a reservoir of murine typhus. A survey in which 294 pools of blood serums from 995 house mice were obtained showed only 1 positive for the antibodies of murine typhus. The positive pool was obtained from serums of 2 mice taken from a barn known to have harbored typhus-positive domestic rats recently. It was the only positive serum of 7 pools taken from such infected premises and could indicate that the house mouse is more likely to be infected where its range is overlapped by that of infected domestic rats. The importance of the house mouse in the epidemiology of murine typhus in Mississippi appears to be negligible at present.

REFERENCES

(*1*) Horn, M. B.: Rickettsialpox survey in New York City. CDC Bull., April-May-June 1949, pp. 38–39.

(*2*) Morlan, H. B., Hill E. L., and Schubert, J. H.: Serological survey for murine typhus infections in southwest Georgia animals. Pub. Health Rep. 65: 57–63 (1950).

(*3*) Beck, D. M., and van Allen, A.: Typhus fever in California, 1916–1948, inclusive. San Francisco, California State Department of Public Health, 1951. pp. 20–30.

(*4*) Keaton, R., Nash, B. J., Murphy, J. N., and Irons, J. V.: Complement fixation tests for murine typhus on small mammals. Pub. Health Rep. 68: 28–29 (1953).

Environmental Sanitation Training Courses

THE SOUTHEASTERN Field Training Station has been established by the Communicable Disease Center Training Branch of the Public Health Service. The station is located at 441 West Peachtree Street, Atlanta, and is open to trainees from States in the southeastern area—Alabama, Florida, Georgia, Mississippi, South Carolina, and Tennessee.

The training program is designed to provide practical up-to-date training for State and local public health personnel and to encourage States to develop training programs of their own.

Most of the courses being offered or planned are in the general field of environmental sanitation. Future training may be extended into other fields as necessary. Much of the trainee's time will be spent in laboratory or field demonstrations. Classroom discussions are informal, supplemented by slides, films, and other training aids. The usual hours are from 8:30 a. m. to 4:30 p. m.

A 12-week course in environmental sanitation will be given twice during 1954, and a 12-week course in sanitary engineering, once. Other courses will be given one or more times as necessary to meet the needs of the States in the region.

The 1954 curriculum also includes short courses in milk sanitation (1 week), food sanitation (1 week), school sanitation (3 days), swimming pool sanitation (3 to 5 days), and dining car sanitation (1 day). Also, 1-week courses are offered for sewage plant operators and water plant operators. In addition, courses in insect and rodent control and housing sanitation are offered. A 4-day tuberculosis short course for health officers is being planned.

The staff is furnished by the Communicable Disease Center Training Branch. Facilities of the Public Health Service in Atlanta and of the Georgia State Department of Health and the Fulton County and DeKalb County Health Departments in Georgia are utilized in the training done in the Atlanta area. Where training courses would be planned and conducted cooperatively with other State health departments, they can be decentralized. Courses may be modified as necessary in order to meet the needs of the trainees in attendance.

Employees of official organizations concerned with public health may apply. Also, applicants may be persons who would qualify for employment in public health after receiving the training at the new station. A limited number of trainees from private organizations and industry may be accepted when space is available. Trainees representing other departments which are concerned with certain aspects of public health, such as departments of agriculture and conservation, are also eligible. From 10 to 20 trainees are usually admitted to each class.

Each application should be approved by the State health officer in the applicant's home State, even though the applicant may not be employed by the State health department. This requirement does not apply to Federal employees, however. Applications should be routed through the sponsoring agency to Chief, Training Branch, Communicable Disease Center, Public Health Service, Atlanta, Ga., or to the Regional Medical Director, Public Health Service, Atlanta, Ga.

Prepared by the Communicable Disease Center, Bureau of State Services, Public Health Service, Atlanta, Ga.

An Industrial Hygiene Project in India

By HARRY HEIMANN, M.D.

INDIA, the eighth largest industrial country of the world, is in the process of rapidly expanding its economy. In this economic expansion, industrial operations play an important part. The Government of India, recognizing the importance of the welfare and health of the workers in maintaining a high level of production, has taken many forward-looking steps to preserve these valuable assets. One of these steps has been the promulgation of laws relative to the prevention of occupational diseases. In fact, India has a workmen's compensation law, in effect since 1923, which recognizes 12 occupational diseases as compensable, and another law, enacted in 1948, which makes notification of the occurrence of 17 occupational diseases compulsory. Claims for compensation for occupational diseases have rarely been made, however, and the reporting of such diseases to appropriate authorities has been even rarer.

The Indian officials concerned have for some years recognized that conditions of work in industry in their country must be a cause of much more illness than the official records indicate, and they have recognized the failure to receive reports of occupational diseases as a defect in their program. They knew that only when they would have information about where and under what conditions these diseases occurred would they be able to take the necessary steps to eliminate them.

Consequently, the Government of India requested that a team of industrial hygiene experts from the United States be sent to India to advise and assist in evaluating its occupational disease problems, with the ultimate purpose of improving the country's industrial production through the conservation of the health of the labor force. More specifically, the request was for a team consisting of an industrial hygiene engineer, an industrial hygiene chemist, and an industrial hygiene physician to demonstrate by precept and by example how occupational disease problems might be evaluated in India.

Dr. Heimann, chief of the bureau of tuberculosis, Puerto Rico Department of Health, San Juan, was detailed to the United States Department of Labor from October 1951 to May 1953 to serve as occupational disease consultant for the Technical Cooperation Administration's industrial hygiene project in India. He was chief of the Clinical Investigations Branch of the Division of Occupational Health, Public Health Service, from 1948 to 1951.

Team Personnel and Equipment

In November 1951, a United States Technical Cooperation Administration team consisting of an engineer, a chemist, and a physician arrived in India to stay for 6 months. At the end of 6 months, only the physician remained, but at the request of the Government of India, the project was extended for another 12-month period. A chemical engineer joined the physician in October 1952 for the last months of the project.

The Government of India, in its original prospectus for the work to be done by the team,

emphasized the fact that the specialized instruments which they would need were not then available in India. Therefore, engineering instruments for collecting air samples and for making field tests of conditions in factories were ordered before the team left the United States. Equipment for medical examinations was not ordered until much later, and it did not arrive until shortly before the project terminated.

Indian Technical Staff

The United States team was assigned to the Office of the Chief Adviser Factories of the Ministry of Labor in New Delhi. In addition to giving advice on occupational disease control, through some 18 State factory inspectorates, the Office of the Chief Adviser Factories has among its activities the following: industrial safety, industrial building construction, certain industrial welfare programs, and dock safety. The first three functions are carried out, primarily, by advisory work to the States, most of which have their own factory inspection units for the day-to-day work. Dock safety work is done directly by this office through its technicians in the important ports of Bombay, Calcutta, and Madras. Thus, the personnel of the Office of the Chief Adviser Factories are occupied with many official duties.

In addition to the director, who was well qualified in industrial safety, a physician, three engineers, and a chemist, all of whom had an adequate grounding in the fundamentals of occupational disease control, were the technical staff of this office. This was the primary group with whom the industrial hygiene team was to work and with whom it was to leave in India a further knowledge of the specialty. As contact was made with technical persons on the State government staffs, industrial engineers, and medical personnel, it was expected that to them as well would be transmitted a better understanding of local occupational disease problems and how they might be solved.

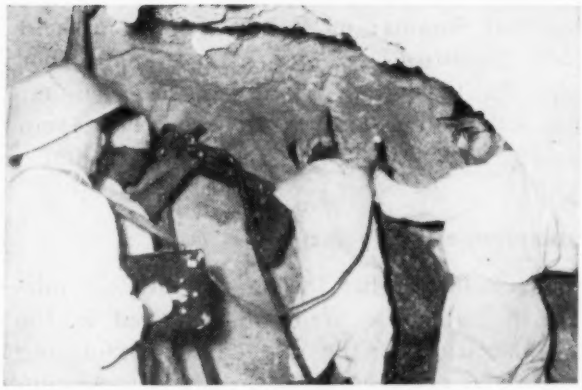
Preliminary Survey

Immediately upon arrival in India, the United States team began its preliminary observations, the purpose of which was essentially twofold: (*a*) to obtain information on the nature of Indian industries and working conditions in them to determine to what degree, if any, they differ from those in other countries; and (*b*) to evaluate the degree of understanding of the occupational disease problems among appropriate Indian nationals. After preliminary conferences and discussions with the personnel of the Office of the Chief Adviser Factories and other officials of the Ministry of Labor, the team visited Bombay, Ahmadabad, Calcutta, and Jamshedpur, in which all types of industry are highly concentrated. Later in the project, the team also visited industrial establishments in Delhi, Mysore, Bangalore, Kolar Gold Fields, Giridih, and Kodarma.

In each of these communities, the team and representatives of the Office of the Chief Adviser Factories held conferences with the State chief inspectors of factories and their staffs and made inspections of factories representative of local industry. In all, some 80 to 100 industrial operations were visited, including chemical plants, automobile assembly plants, foundries (ferrous and nonferrous), ceramics factories, glass factories, paint factories, steel plants, airplane repair plants, storage battery factories, dry-cell battery factories, rubber tire factories, manganese mines, iron ore mines, metal machining operations, clothing factories, leather tanning factories, cloth weaving sheds, and jute factories. In each, pertinent recommendations were made to factory management, as necessary for the evaluation and control of occupational disease hazards. As items regarding occupational diseases were observed, they were pointed out to the Indian Government officials and others who accompanied the team on these tours.

Broad Study Program

Following the preliminary observation period, a program of actual field surveys was prepared. These surveys were to be undertaken to determine the size of the occupational disease problem in India and how it might be combated. It appeared to the team that, in the present stage of industrial development of the country, the largest single group of occupa-



Collecting a sample of airborne dust while workers operate a mechanical drill in a mica mine.

tional disease hazards was the industrially created dusts which tend to produce adverse health effects on the lungs alone. Therefore, the program stressed the need for surveying the industries that have been known to produce such diseases elsewhere, such as the cotton textile industry, the jute industry, mining, and the asbestos industry.

Planned Studies

Most of the planned studies were done in three field surveys of occupational disease. These included studies of the health hazards in refractory brick making and chromite mining and processing and a study of the silica dust hazard in mica mining and processing.

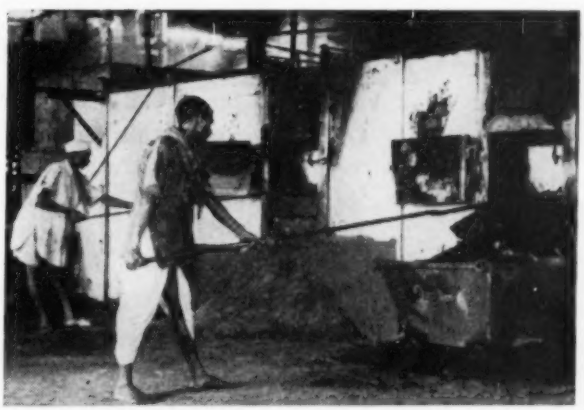
The United States team planned the study of the health hazards in refractory brick making, made the initial survey, prepared the prospectus for the investigation, indicated where and how the environmental dust studies should be made, and, finally, read all the chest X-ray films. The data will be analyzed and a written report prepared by the Ministry of Labor technicians, on the basis of the pattern the team established and the report will be published by the Government of India.

For the chromite mining and mica mining studies, the team prepared the prospectuses, participated in the preliminary surveys, participated in and supervised the collection of the engineering and medical data, and prepared the final reports. The report of the survey made in the mica mines of Bihar State shows the chemical nature of the airborne dust and the degree of dustiness, the nature and degree of pulmonary disease caused by that dust, the incidence of chronic pulmonary disease among the exposed workers, and the relative degree of effectiveness of dust control measures used in some of the mines, and it makes recommendations for further improvement of the existing controls. This comprehensive survey and report probably were the the first of this type to have been made in India.

Collateral Work

As time permitted, the United States team participated in other activities to help the Indian technicians increase their understanding of occupational disease. Upon their arrival in India, the team found that the Office of the Chief Adviser Factories had made two studies of occupational disease, one in the chromate manufacturing industry and the other in the lead storage battery industry, and had collected data which needed to be analyzed for possible significance. A minor objective of the studies was the demonstration of the degree to which the Indian technicians might need guidance. The team reviewed the material and, after lengthy conferences and discussions with appropriate technicians, helped to analyse the data and prepare suitable reports. These reports will be published by the Government of India.

A second activity in which the team participated was the preparation of a brochure to



Furnace operation in a chromate-producing factory.

stimulate reporting of occupational diseases, and to assist all concerned—medical personnel in particular, but also factory inspectors, labor welfare officers, personnel managers, safety officers, and others—in recognizing these diseases and to instruct them in the methods of prevention. This 80-page booklet was printed by the Government of India for very wide distribution.

A third team activity was the demonstration of certain laboratory methods and the proper use of industrial hygiene field and laboratory testing equipment. Methods for performing dust counts and for collecting air samples were demonstrated to industrial hygienists. Chest X-ray reading for pulmonary dust effects was demonstrated not only to the Government technicians but also to all medical personnel who manifested an interest in this subject.

In addition, some 40 lectures were given on various phases of the occupational disease problem to physicians, engineers, State factory inspectors, and others concerned with the health and welfare of the labor force. It is estimated that about 1,000 technical persons were in attendance at these lectures. Lectures were given to students in the courses in industrial hygiene at the All India Institute of Hygiene and Public Health in Calcutta, and to a large group of State junior factory inspectors. Lectures also were given at the Southeast Asian Regional Seminar on Labor Inspection, held under the auspices of the International Labor Office in Calcutta. Attending this seminar were representatives of all the Southeast Asian countries, as well as representatives of India.

Evaluation of the Project

It is believed that the objective of the mission to India was accomplished, that is, the demonstration of the method of performing field surveys of occupational disease under conditions that exist in India; but it is recognized that more work needs to be done in the country for the control of those diseases. A beginning was made in making people realize that there are occupational diseases in India and that they can be controlled and prevented. It is felt, however, that more work also should be done in alerting the people to occupational disease problems.

Partly as a result of the work of the industrial hygiene team, further training in industrial disease control is being planned by the Government of India for selected government technicians. One chemist and one engineer have each spent 6 months in the United States gaining experience in industrial hygiene. It is expected that a qualified physician will soon be sent to the United States for training in industrial pulmonary dust diseases.

Premarital Examination Laws Compiled

A compilation of the laws now in effect in the United States and its Territories requiring premarital blood tests and physical examinations for venereal disease will be included in the publication Premarital Health Examination Legislation scheduled for release by the Public Health Service in August. The laws have been reproduced from the various legal sources of the States and Territories. Citations to these sources are given for each law.

A limited number of free copies will be available upon request to the Chief, Venereal Disease Program, Division of Special Health Services, Public Health Service, Washington 25, D. C.

Health Education via Television

Three TV Series In Washington, D. C.

By Truman J. Keesey

ONE pert young lady closely associated with the show remarked that in terms of preparation, organization, and production it seemed like a Broadway show.

But it wasn't. It was just the Sunday night camera rehearsal for one of the television programs of the "Face to Face" series which dramatized the emotional problems of adults. This program like the one on venereal diseases and the one on alcoholism was a pioneer health series on TV, sponsored jointly by the District of Columbia Department of Public Health and station WTOP–TV (Washington, D. C.). Each ran for 13 weeks.

Truman J. Keesey, writer and coproducer of the District of Columbia health TV series, is a program development specialist in the Public Health Service, assigned to the District of Columbia Department of Public Health. After his graduation from George Washington University in 1934, he taught in the District of Columbia public schools. He also was an editor of an educational research bureau.

On the succeeding pages 606 and 608 are reports of how two other local health departments—Denver and Grand Rapids, Mich.—are using television as a medium of health education. Readers interested in the current series on TV are referred to Joseph Gordon's article in Public Health Reports (August 1953, p. 816) on Baltimore's experience with the 15-minute weekly TV series, "Your Family Doctor."

Time, The Essence

Public service time is the basic requirement for a health television show (*1*). There are no laws or Federal Communications Commission regulations which specify that a TV station must donate any definite amount of time for public service, although in applying for their licenses, stations usually indicate how much time they expect to allocate for public service. Since many public agencies seek public service time, health departments must compete with them for the limited free time available.

In order to get public service time for health education, health officials may find it necessary, particularly in metropolitan areas, to convince television station officials that:

Information for making the people of a community healthier is of vital importance to the people themselves.

Through the presentation of health topics, they can jointly give a great public service.

They can thereby build a sizable audience for the television station and support for a health program which benefits the people of the community.

Presentation of such a program will contribute to building goodwill in the community for the station and for the health department.

The public health program presents opportunity for developing materials and possibly techniques for the improvement of man's environment; and such materials could be used throughout the country and probably overseas as well.

No topic is so important or so interesting as the facts surrounding birth, life, human development—the actions, reactions, and interactions of people—and those leading to death. These are the substance of the bulk of all literature. Public health personnel work with these, live with them daily. There is a dynamic story for them to tell the public about these vitally important aspects of real life drama.

In approaching a station for free time, it is advisable to have at hand all possible information concerning the programs to be presented (*2*).

For example, when the District of Columbia station was approached for public service time for the venereal disease series, the first of the health department's TV projects, a complete format was available for the area to be covered in each program. Following the satisfactory presentation of this first series, station WTOP–TV indicated an interest in giving additional television time for health topics, and the work of the District of Columbia Department of Public Health which could be televised was then explored and discussed with station officials. The television station's program committee selected the topics for the next two series, on alcoholism and on the emotional problems of adults.

However, it isn't necessary in all negotiations to have all material as well prepared as the one-package format for the venereal disease series. It should be expected, though, that TV station personnel will have a relatively limited knowledge of the health subjects. Their talents lie in production and presentation.

Research and Planning

After the public service time has been obtained, such detailed data as case studies can then be collected, assembled, and sifted into the various programs planned. Next, the format for each program should be arranged. Whether it will be a panel discussion, a lecture, a dramatic presentation, or some other format will be decided, and also, whether film, charts, or graphs will be used. Wherever possible, the names of participants or a tentative list of participants should be drawn up and included with the format. A tentative timing in minutes for each aspect of the 15- or 30-minute program also should be prepared. Following is an example of a schedule for a 15-minute program:

Opening	1:00
Kitchen sequence	3:00
Narrator	0:30
Living room sequence	4:00
Narrator	0:30
Bedroom sequence	3:00
Narrator	0:30
Dr. Bigby	1:30
Closing	1:00

Since staff members of the health department are most familiar with the work of the department and particularly with the topical material to be covered, they are the logical ones to do the research and to prepare basic or case material for the scripts or to supervise this phase of the work.

The action we see on television in a brief 15 minutes sometimes requires months of preparation (*3*). Several months were devoted to research, preparing format, planning and organizing unit programs, and preparing material to be presented and publicity for each of the three series. But all material was kept sufficiently flexible so as to permit any last-minute changes.

The "Face to Face" Programs

Planning for the "Face to Face" series began more than 4 months before it opened. The planning committee was composed of representatives of the District of Columbia Department of Public Health; the District of Columbia Mental Health Association; the National Institute of Mental Health in the Public Health Service; the Office of Vocational Rehabilitation of the Department of Health, Education, and Welfare; and St. Elizabeths Hospital (a mental institution operated by the Department of Health, Education, and Welfare). Included on this committee were psychiatrists, psychologists, psychiatric social workers, a vocational rehabilitation counselor, leaders of

community organizations, and the health educator from the health department who was responsible for the preparation of the scripts.

Program planning sessions were held, usually 1 day a week, sometimes 2, lasting 1 to 2 hours. Meetings were held when it was most convenient for clinic personnel. When additional case data were needed, there were occasional meetings.

Following these conferences, the health educator sifted the recommendations of the planning committee and suggested concrete proposals for the 13-weeks' series. Then, with the approval of the planning committee and WTOP–TV representatives, the preparation of scripts was begun.

At this time, the television station assigned a coproducer, a director, and a narrator to work on the show. In these joint health department-television station productions, there is a producer from each organization. Each functions as a coproducer. Since there were no public funds available for the District of Columbia series, the station assumed full financial responsibility for the programs. This underwriting did not include the preparation of scripts or production by personnel of the health departments. Moreover, in the "Face to Face" series, station personnel built sets for the various programs, and the artist worked overtime dressing up some of the sets. Because of the cost involved, the time-consuming job of shooting, editing, and preparing film for presentation, and because live shows would be more effective, it was decided to try to produce live shows.

The director of the health department's division of mental health and the regional mental health consultant of the Department of Health, Education, and Welfare, both participated in the planning sessions, and were responsible for the validity of the medical information in the scripts and in the publicity releases on the series.

After the areas to be covered in individual programs were agreed upon, titles which would attract attention were arranged for each program. Each program was designed and written to reach the community as a whole—it was not "pitched" toward any separate group. Information disseminated in the various programs had three major objectives:

To help individuals understand their emotional problems.

To tell those needing help where to find it.

To build the much-needed support for a community program in the field of mental hygiene.

Writing the Scripts

A good script is the basis for a good show (*4–6*). Every possible detail, such as character description, set, dialogue, action, and camera and "audio" instructions, should, therefore, be carefully thought through when preparing the script. However, it isn't necessary to include stage and camera directions. These can be left to the interpretation of the director.

From the case or basic material prepared by the psychiatrist, psychologist, and psychiatric social worker, the health educator prepared a draft script of each "Face to Face" program. To protect the identity of a patient, all case data were modified.

Copies of the draft scripts were sent to the psychiatric consultants, several leading local practitioners of psychiatry, the National Institute of Mental Health, the television station, and to the prominent individuals and specialists who "summed up" at the end of each program and the representatives of the local community agencies who appeared on the various programs. Each one scrutinized the scripts carefully and either approved them or suggested improvements.

The program director and the cast followed the script quite closely. Once the scripts were approved and turned over to the studio, no changes were permitted except those made by the director and producers, and then only for the purpose of improving the presentation. However, no tampering with the medical facts was permitted.

Publicity

In order to obtain the maximum publicity benefit, the title for the series, titles and abstracts of programs, names and identification of participants, and as many scripts as possible should be ready at least a month in advance of the starting date of the first program.

Releases on the "Face to Face" series were sent to all local and suburban papers, wire services, science editors of newspapers and general magazines, and to such trade magazines as *Billboard* and *Radio and Television Daily Guide*, and to foundations interested in health.

Casting the Mental Health Series

The favorable reaction to the "Face to Face" series proved the effectiveness of using the people who were actually participating in the District of Columbia mental health program rather than professional actors. Two months before the series started, participants in the mental health program—many of these were clinic patients, people with emotional problems who were interested in taking part in the television programs and who were actually doing so as a part of their therapy, or members of the clinic staff—agreed to enact the roles in the series, and actually did so in all but 3 of the 13 programs. The 3 programs in which they took no part dealt with special problems in the mental health field and were done by select groups working in these special fields.

Most of the programs in the three health series were rehearsed at least once on the set, some several times, including a rehearsal with cameras. Several of the programs on alcoholism were rehearsed at least once, and sometimes twice before going to the studio for rehearsal. Health department and television station personnel do their utmost to make all program participants feel at ease on set.

Rehearsals were held in the studio for an hour once each week. The cast would walk through simulated props (property items) of their scenes and familiarize themselves with their lines and become acquainted with their fellow participants. Then, on Sunday nights, everyone reported to the studio for several camera run-throughs an hour and a half before show time.

From time to time, the cast made suggestions for improvements, occasionally changing a word or a group of words, or augmenting action to make the lines more impressive, and occasionally suggesting props or attire to improve the presentation. Their suggestions were welcomed.

Use of Film and Other Aids

Films, graphs, charts, pictures, and other objects can be used to enhance the presentation of a subject. The use of charts and graphs should be kept to a minimum.

The production of film, however, is expensive. In the venereal disease and alcoholism series, health department personnel selected the subjects to be filmed, and the studio cameraman made the shots. To save time and expense in shooting films, the director and producer should list and carefully study all selected targets. Such study may reveal that shooting some of the targets may not prove feasible. By taking all possible steps to conserve the time of the cameraman and sound engineer, production costs can be cut down.

Film was used extensively for the series on alcoholism. Although this film deteriorates slowly and can and may be used again, producing it took much time and was rather expensive. To select targets, to visit them, to set up equipment, and to shoot the scenes took time. To develop the film and to edit the scenes and to write the accompanying narration took additional time. When films are available, permission must be obtained to use cuts from them. But, compared with shooting new film, this use of films already produced requires less time and expense.

When a permanent record is desired of a television program, a film can be made of the program after it has been presented or it can be kinescoped.

Filming the show after presentation, by running through the show in its entirety before the movie camera, has better results. The film usually is better, has longer life, costs less, and bad parts may be deleted or improved by careful editing without injuring the continuity.

A live show which uses people from the various occupations in the local community as in the District of Columbia's venereal disease series, or which uses patients and clinic staff as in the series on alcoholism and emotional health is far more realistic than a filmed show. Certain aspects of a health program, such as clinic and hospital work, however, have to be presented on film unless they can be simulated in the studio.

Producing a TV Show

Good production reflects good preparation and well-spent rehearsal time.

The final stage of production is the actual telecasting. The director assigned by the TV studio is responsible for this production stage. Although he works out preliminary details with the health department coproducer, at this point his decisions are final. From the engineers in the control room of the station through the floor manager on the set, the director manages the production personnel of the show as it goes on the air. He directs the work of the cameraman and the other technicians. The narrator performs under his supervision.

On several of the programs in the series on alcoholism, clinic personnel substituted for the narrator because the narrator was not familiar with the technical information. This substitution, however, did not work out too well: Health department staff, although knowing their material, did not present it effectively, and frequently, they were off camera (not facing the cameras). Consequently, experience has proved that it is better to have a professional narrator present the technical material in his own manner and words, making for a better presentation and also for better understanding.

"VD—Very Dangerous"

A number of considerations led the health department to seek, as a part of its educational program, the televising of the District of Columbia venereal disease story. Among these considerations were a reduced budget which affected the venereal disease contact investigation program, the lagging interest of many persons who had taken an active part in a citizens committee for venereal disease control, and a need to emphasize to the public that there still was a serious venereal disease problem in the District.

Moreover, it was thought to be particularly important to try to reach the late adolescent group, which was known to have the highest incidence of venereal disease.

These points had been repeatedly stressed by staff members of the health department's bureau of venereal diseases in talks before various community organizations and also through the press and over radio and television. It was necessary to reach the general public with these facts so as to emphasize the problem to the large numbers of people affected in the community. Television provided the means of realizing this objective.

Station officials at WTOP–TV, because of their experience with venereal disease radio programs, believed that the subject of venereal disease could be presented in good taste and with dignity. The station officials approved the general plan outlined by the health department, allotted the time, and furnished a narrator from the station to work with health department personnel. After these preliminary negotiations had been completed, production began on "VD—Very Dangerous," the venereal disease series.

In Washington, D. C., community responsibility for venereal disease control had been placed in the cosmopolitan, representative Citizens Committee for Venereal Disease Control. The various programs of the TV series on venereal disease used members from this committee along with officials of the health department and private practitioners of medicine to reemphasize the necessity for continuing community responsibility for venereal disease control.

The street interviews used on one program proved to be one of the most interesting bits of television camera work done in the entire series. To determine how much the average person knew about venereal disease and whether he was willing to talk about it, it was decided to stop Mr., Mrs., and Miss Washington on the downtown streets and question them about the subject. Everyone involved in the street scenes—narrator, cameraman, engineer, producer, and others—was due for a surprise. Practically all persons stopped, responded to the questions, and revealed that they did have some knowledge of venereal disease.

Alcoholism—"The Road Back"

From the viewpoint of community education and responsibility, there was a great difference between the planning and organization for the venereal disease control program and the alcoholic rehabilitation program:

There was a paucity of health education media on alcoholism—printed materials, motion pictures, recordings, and other information aids—as compared with the variety and quantity of materials available for venereal disease education.

There are a large number of alcoholics who, while appearing regularly before the courts, do not get treatment. Venereal disease control has no such court problem.

And, finally, there was no committee working for the rehabilitation of alcoholics such as the one actively interested in venereal disease control and broadly representing community leadership. There was, therefore, a greater need for education in the cause of alcoholism and about the services and facilities of the alcoholic rehabilitation program of the District of Columbia.

Program personnel met regularly and often with a committee from the health department's alcoholic rehabilitation program clinic. The committee was composed of a psychiatrist, psychologist, psychiatric social worker, and nurse. These sessions lasted from 1 to 2 hours and were held weekly during a 10-week period preceding the start of the series. There were only occasional meetings of this group after the series started, but the producers met weekly with a staff psychiatrist and others who were scheduled to appear on the programs.

The alcoholism TV series, titled "The Road Back," emphasized the fact that the alcoholic is a sick person, needing medical care in the same way as a person sick with tuberculosis or heart disease. The programs concentrated on alcoholic patients and the people who work with them—physicians, psychiatrists, psychologists, social workers, nurses, and occupational therapists.

Rehabilitated alcoholic patients participated in 10 of the 13 programs, enacting the roles involved in the 4 representative cases which had been carefully prepared by the clinic staff and which were followed throughout most of the 10 programs. The title and subtitles for the series were more subtle than the more obvious titles of the venereal disease programs. Two of the programs were panel discussions, and a third show was on film.

In "Road Block," the first program, the audience was presented with the problem of the chronic drinker. In the succeeding programs, the viewer was taken step by step through the intake interview, diagnostic interview, psychological testing, and individual and group therapy, showing their application to the reestablishment of the alcoholic as a producer in the community life. A program on psychodrama as a technique of therapy was also included in the series. The concluding program in the series urged that:

Problem drinkers go for help either to their family physician, Alcoholics Anonymous, or the clinic of the District of Columbia alcoholic rehabilitation program.

Rehabilitated alcoholics and others taking treatment be given jobs commensurate with their capacity to produce and at pay which would permit living in good health and decency.

A municipal facility with separate quarters for men and women be provided where alcoholics on the "road back" may stay until they get on their feet.

Private hospitals admit alcoholics.

An intensified educational program be developed.

A broad citizens committee for rehabilitation of alcoholics be organized.

The District of Columbia establish an alcoholic rehabilitation farm for work and the multiple therapy techniques used in the treatment of mental health patients.

Audience Reaction

American University's Bureau of Social Science Research (Washington, D. C.) conducted a limited survey to determine audience reaction to the venereal disease series. The survey revealed that the programs had "served to stimulate a slight increase in clinic attendance." The percentage of new admissions who had recently viewed the venereal disease programs over television, it was found, increased from 2½ percent in October to 4 percent in November 1952. There was an additional increase of 1 percent in December 1952.

Telepulse surveys are conducted on a door-to-door basis and in the same manner as Census Bureau surveys. The percentage of listeners to

a television program is computed on the basis of the total number of sets the station reaches in the listening area at the time the survey is made.

Despite late presentation time, the 3 health series, although in competition with 2 feature movies almost consistently, had the largest audience. One survey conducted the first week in December 1952 revealed the following:

		Percent
WTOP–TV	Venereal disease series	6.4
Station B	Feature film	6.0
Station C	Feature film	5.2
Station D	News	2.0

At the time of the December 1952 survey, there were an estimated 410,000 TV sets in the Washington area. On the basis of the average number of listeners per set—an estimated 1¾ persons per set viewing a program—multiplied by the 6.4 percent of the television-listening audience, it is estimated that 45,920 persons were viewing the venereal disease series during the survey. The surveys for the other series showed similar audience response.

Both the television station and the health department received requests for help with personal problems and for literature on the subject of mental hygiene. Scripts already have been sent to 60 national, State and local, public and private, health agencies, and to universities, public school systems, and private industrial and business organizations. Requests for scripts also included one from a State medical society and a national television system outside the United States.

Scripts of the various venereal disease programs have been sent to all of the State and Territorial health departments and to some local health departments and also to health officials in countries of Africa, Asia, Europe, and Latin America. Some of the State and local requests for scripts resulted from the publicity the series received.

Summary and Conclusions

This has been the District of Columbia's experience with three television series, dealing with two different types of public health problems—one a physical problem, venereal disease in terms of community education and treatment at an advanced stage, the other two dealing with mental illness.

Favorable public reaction to these three series and to health topics presented over television reflects the great public interest in health generally and particularly in health programs on television.

In order to hold the attention of viewers and to increase their number, health programs must be well-planned, factually correct, well-organized, and well-presented. In order to make health programs more acceptable, they should be dramatized—health and medical facts should be presented so that they simultaneously are both enlightening and entertaining.

The maximum of cooperation and harmony between professional disciplines of the medical field and TV station personnel are essential for a successful production. This means the harmonious work, on the one hand, of physicians, psychologists, nurses, social workers, and scriptwriter or health educator, and, on the other, of the director and producer representing the television station.

REFERENCES

(*1*) Mabley, J.: What educational TV offers you. Public Affairs Pamphlet No. 203. New York, N. Y., The Public Affairs Committee, Inc., 1954.

(*2*) Hodapp, W. C.: Television manual. New York, N. Y., Farrar, Straus, and Young, 1953.

(*3*) Hubbell, R. W.: Television programing and production. New York, N. Y., Rinehart and Company, 1950.

(*4*) Seldes, G. V.: Writing for television. New York, N. Y., Doubleday and Company, 1952.

(*5*) Kaufman, W. I., and Colodzin, R. S.: Your career in television. New York, N. Y., Merlin Press, 1950.

(*6*) Greene, R. S.: Television writing; theory and technique. New York, N. Y., Harper and Brothers, 1952.

"Your Lease on Life" In Denver

By Charles E. Pinckney, M.P.H.

WHY aren't there more health programs on television?

Probably the greatest deterrent to the production of live television shows by local health agencies is the fear that the cost is prohibitive. Perhaps it's because so few health departments have personnel with the combination of skills or talents required for production of live television shows. Then, the production of TV shows is a time-consuming activity. And, too, the job of coordinating the many elements which go into a successful series of television programs—the script-writing, the casting, the rehearsals, and the assembling of props (property items)—seems to be a formidable task.

As a result, health agencies, if they are using television, have to be satisfied with an occasional, simply conceived, live show or with one which features filmed material.

The Rocky Mountain Radio Council

The voluntary and official health agencies of Denver were faced with all these problems when the idea of sponsoring a series of TV shows on health subjects was first presented to the agency representatives at an exploratory meeting where the plan was discussed.

A new television station in Denver had written to the Colorado State Department of Health requesting the loan of health films to be used to fill in unscheduled telecasting time. The production manager of the TV station was approached to see if he would be interested in a regularly scheduled series of health shows as a sustaining program. He favored the idea. Invitations to attend a meeting to discuss the possibility of presenting such a series were sent to all health agencies, including professional medical groups.

The original plan had been to use a film and a speaker for each show and to make a single agency solely responsible for 1 or 2 TV shows. How to achieve economy in producing the shows was the chief problem, even though the TV station agreed to give free time as a public service and to provide some assistance in production. Fortunately, an unexpected community resource changed the whole concept of the proposed series so that it was possible to consider the production of "live" programs.

This unexpected resource was the Rocky Mountain Radio Council, a nonprofit Denver organization of professional radio and television writers, directors, and producers, which offered to produce a series of live shows on a contract basis provided the health agencies would cooperate in furnishing technical information around which the shows could be built. The radio council proposed to provide the necessary technical production skills if the agencies would furnish the subject matter, consultative advice, performers, and props essential to each program.

This plan was adopted by representatives of the health groups. The project then became a cooperative venture resulting in a 25-week series of 15-minute live shows entitled "Your Lease on Life," and produced during 1953.

Cooperative Sponsorship

The problem of financing the series was solved through cooperative and voluntary contributions of money, personnel, and—that very intangible element—mutual understanding and support. A temporary finance committee proposed that contributions, which would be used only to pay for the services of the Rocky Mountain Radio Council, be made on a voluntary basis by participating agencies according to their ability to support the project.

Mr. Pinckney, health educator, State of Colorado Department of Health, received his master's degree in public health from the North Carolina Graduate School of Public Health in 1950. He conducted a generalized program of community and school health education in three western Colorado counties in 1950–52 when he was employed as a health educator by the Western Slope Tuberculosis and Health Association, Grand Junction, Colo.

The contributions were donated with the full understanding that they were made for the good of all and that they did not guarantee a specific program for a specific agency. It was also agreed that the amount of television time devoted to any subject would not be governed by the amount of money contributed by any one agency. Fund-raising of any kind, as such, would not be the subject of any program in the series. The programs to be presented as part of the series were not intended to replace any of the other educational or public information programs of the participating agencies, nor did the donation of public service time by station KBTV (Denver) preclude the donation of additional free time for other phases of agency activities. Each agency, moreover, reserved the right to edit the script of a show in which it was involved. Finally, due credit would be given to all contributing agencies during the series whether or not any single agency had a program devoted to its specific interest. At the conclusion of each show, the names of the agencies which took part in it appeared on the TV screen.

The fact that an agency had not contributed to the common budget in no way excluded it from participation in, or sponsorship of, the series. Frequently, an agency which had not indicated a particular interest in the project was persuaded to assist in a show in which it had a significant interest in the health topic under discussion.

Basic to the concept of a cooperative sponsorship for "Your Lease on Life" were these four principles:

Each show was designed to tell what was being done in the Denver metropolitan area to increase each individual's "lease on life."

Services and activities, not philosophies, were to be used as the framework of the shows.

Details and minutiae of any given subject would often have to be sacrificed in favor of audience appeal.

The programs were to tell what was being done by the efforts of several agencies, separately or in cooperation with each other, rather than to "promote" the program of any one agency.

Coordinating the Project

Since there were some 20 agencies which originally sponsored the series, it was necessary to set up some kind of structure for coordinating the activities of all agencies and for planning the sequence of programs. Accordingly, there was selected a permanent advisory committee composed of a representative of the Rocky Mountain Radio Council, the program director of station KBTV, a member of the Colorado State Medical Society, and four representatives from official and voluntary health agencies in Denver. A member of the advisory committee was made program coordinator for the entire series.

The advisory committee met periodically to select suitable topics for future shows and to outline suggested points to be presented in each. About 2 weeks before each show, the representatives of the agencies concerned with the particular health topic met with the scriptwriter and producer and other members of the staff of the radio council to plan the program in detail, to select people to appear on it, to decide which visual devices might be used, and to work out any special problems. The actual production of the show then became the concern of the radio council. A publicity committee was appointed to publicize the series.

Before the end of the series, 51 agencies had participated in 1 or more shows, and all contributing agencies, as well as many noncontributing agencies, had been listed as sponsors of the series. In all, 128 persons appeared on the programs. Most of them were medical or paramedical persons. They included physicians, dentists, nurses, public health workers, laboratory technicians, and hospital personnel. Some were professional or amateur actors.

On a limited budget, simplicity is essential. Dramatic shows with expensive sets were not attempted. On the other hand, panel discussions and long sequences of films were not considered as suitable techniques. By using amateur talent, it was found that demonstrations, capsule dramatizations, personal interviews, and "ad-libbed" conversation in an informal setting provided effective methods for getting the idea across. Whenever and wherever possible, visual aids were used to hold the attention

of the audience. It was recognized that this extensive use of "eye-catchers" sometimes resulted in a loss of cohesiveness. Each show attempted to get 1, or at most, 2 ideas across.

Shows have been presented on these and other subjects:

Blood banks of Denver.
Alcoholism.
Rheumatic fever.
The hard-of-hearing.
Dental health.
Sight conservation.
Orthopedically handicapped children.
Milk sanitation.
Rehabilitation of the handicapped.
Rabies control.
Cancer.
Bicycle safety.
Mental health.
Arthritis and rheumatism
Hospital services.
Misuse of medicine.
First aid in civil defense.
Effects of radiation and atomic medicine.
Tuberculosis.

The program on rabies control is an example of a typical program. Representatives from the Denver Health Department, the Colorado Veterinary Medical Association, the Denver Medical Society, and the Colorado State Health Department Laboratory met with the radio council staff to plan the show on rabies control. Its central theme was "Get your pet vaccinated," and the program was built around the carefully staged vaccination of a dog.

A veterinarian, a physician, a woman with her pet dog, a health officer, and a laboratory technician appeared on the program. Short film sequences of a dog with rabies, a professional actor simulating symptoms of a human being with rabies, a laboratory technician making a smear of a dog's brain for microscopic examination for Negri bodies, a projection of a slide with Negri bodies, the use of white mice as a further test to determine the presence of the rabies virus, an oversize dog tag, and statistical summaries, by neighborhood, of the number of dogs vaccinated in Denver helped illustrate the point of the program. Participants or agencies connected with the show provided the props.

Results of the Series

Results of the TV project were measured by mail response to the programs, by reports from contact with the public received from the sponsoring agencies, and by reports from Telepulse, a nationwide television audience survey. In certain selected programs, pamphlets, brochures, and information sheets were offered to viewers who requested free literature.

The response was gratifying. Requests came in not only from the Denver area but also from Boulder, Fort Collins, Greeley, and other towns in eastern Colorado. Unsolicited comment as passed on to the groups sponsoring the shows were almost unanimously favorable. More tangible than these, however, were the Telepulse statistics from scientific random surveys which indicated an estimated 40,000 viewers were seeing the programs each week, despite the fact that a popular commercial program was in the same time segment on Denver's only other TV station. "Your Lease on Life" lagged only three points behind this other program.

As an experiment in cooperation, if nothing else, the production of "Your Lease on Life" was an enjoyable and beneficial experience. Those persons who contributed their time by participating in the series, whether as actors reading lines, consultants planning a program, providers of some of the many program devices or visual aids, or interested committee members—all learned how much patience, cooperation, and hard work are needed for a 15-minute live TV show.

"Health of Our City" In Grand Rapids

By Morris Barrett, M.P.H.

HOW did the city health department in Grand Rapids, Mich., become a producer of television programs? How did the programs

Mr. Barrett is the first health educator to be employed by the Grand Rapids (Mich.) City Health Department, with which he has been associated since September 1952. Before receiving his master's degree in public health from the University of Michigan School of Public Health in June 1952, Mr. Barrett had 3 years' teaching experience in health education in New York City, 1948–51.

originate? How did the department arrange for the time? How did it set up its TV program?

The city health officer made the initial contact with one of the directors of television station WOOD–TV in Grand Rapids. Within a few weeks, the health educator in the Grand Rapids City Health Department was planning a TV program outline to be presented to the division heads of the health department. It was decided that the health educator would do much of the planning and preparation of the programs and that the health department staff would cooperate and participate in the programs.

The first program, which was planned and auditioned at the studio, resulted in "Health of Our City," a weekly half-hour television series, which has been on the air ever since May 22, 1953. The series is scheduled on a 52-week basis until further notice.

Some of the Topics

The "Health of Our City" series has been centered around health-related problems, activities, and programs in Grand Rapids. Programs are set up to define the specific health problems so that they are understood by all, to show their extent in Grand Rapids and the United States, and to explain what is being done to combat the problems locally and to indicate where additional health programs are needed. Some of the programs have centered around these topics:

Heart disease.
Cancer.
Home accidents.
Public health nursing.
Environmental health services.
Tuberculosis.
Mental health.
Overweight.
Alcoholism.
Industrial health.
Poliomyelitis.
Preschool health.

The programs are entirely educational. By suggesting definite action on the part of the viewer, they differ from the informational type of program where no action is intended. The programs capitalize on the visual advantage that TV offers rather than on conversation as the prime method of communication. A script is prepared by the health educator merely as a guide. It is seldom used during the program and is intended only to familiarize participants with the questions. The inset shows a typical script, one used for a half-hour program on home accidents.

A variety of program formats have been utilized—the panel discussion, the interview, and the psychodrama. The type of program depends on the subject being discussed and the personality of the participants. As greater experience is gained, more time is being spent on cultivating new programs and less time on organization and rehearsals.

A General Outline

Here is the general outline which is usually followed in a 30-minute television program:

1. Introduce participants, agencies.
2. Define problem, activity, or service being presented. *a.* Visual aids; *b.* demonstration; *c.* discussion.
3. Discuss health problem, activity, or service as it affects local community. *a.* Whom it serves; *b.* whom it affects.
4. Present solution offered to meet problem. *a.* Role of the agencies; *b.* of the health department; *c.* of the community.
5. Clearly state what the community and the individual can do to cooperate in the various programs.
6. Mention available facilities and resources.
7. Reemphasize pertinent facts and recommendations.

Visual aids greatly enhance the effectiveness of a television program, and these have been the "backbone" of most of the Grand Rapids health series. Films, photographs, charts, posters, maps, and graphs are used freely. The use of a clean blackboard or a sketch board is a simple device, yet highly effective.

Better Public Relations

The health educator is responsible for the planning of the program, outlining the script, preparing visual aids, and acting as moderator for each program. All decisions are cleared with the city health officer and a health education committee composed of health department personnel. Comments received from the view-

ing audiences have been most favorable. Criticisms or suggestions from the staff or viewing audience are always considered. To date, the TV programs have not cost the city health department any additional money because it has used local personnel, available charts and graphs, and local films. Some of the clearance fees for films have been paid by cooperating agencies.

Proper planning and utilization of television is the best tool the health educator can use. Successful TV programs do not just happen. They are the result of group planning, in making best use of television time. In planning educational television programs, these two thoughts must be kept in mind:

Who are the people we are trying to reach?
What do we want them to do?

"Health of Our City" has done a great deal in fostering better public relations between the health department and other community organizations. Persons are invited from private, voluntary, and professional organizations to appear on the program. The "community teamwork approach" in solving health problems is well utilized. "Health of Our City" has proved an excellent means of revealing the community's health problems to itself, simply and effectively.

The Kent County (Mich.) medical and dental societies have given their support to the program by encouraging local physicians and dentists to appear as guests on various programs. The city health department offered one of its programs to the Michigan State Medical Society in conjunction with the society's annual meeting in Grand Rapids. Representatives of the society explained the organization's purpose and relation to public health. A new film on heart disease was shown, followed by a discussion with a heart specialist.

Public relations, which are a vital factor in any public service program, are certainly developed and strengthened with those persons who would otherwise have no understanding of a local health department. This may be the most substantial end result of a local television program.

TV has developed its own language. For those who plan to use this medium of communication, the editors recommend the TV dictionary-handbook published by Sponsor, a television and radio trade journal, and the TV Handbook published by the Bureau of Health Education of the American Medical Association.

Departmental Announcement

Albert H. Holland, Jr., M.D., was appointed medical director of the Food and Drug Administration on March 7, 1954. As director of the Division of Medicine, Dr. Holland is responsible for advising the Food and Drug Administration on all medical questions involved in the enforcement of the Federal Food, Drug, and Cosmetic Act. The Division of Medicine also administers the new-drug provisions of the act, and assists in the development of medical evidence in court cases involving adulterated and misbranded products.

Dr. Holland was medical director for the Armour Laboratories in Chicago from January 1951 until assuming his present duties. From 1950 to 1951 he was director of the Office of Research and Medicine for the Atomic Energy Commission at Oak Ridge, where he had previously served for 4 years as medical adviser to the Manhattan Engineering Project.

technical publications

Distribution of Health Services in the Structure of State Government

Part 4. Environmental health and safety services provided by State government

Public Health Service Publication No. 184, part 4. 1953. By Aaron W. Christensen, Evelyn Flook, and Rubye F. Mullins. 81 pages; tables. 50 cents.

This fourth and final pamphlet of the series on the 1950 survey of health services provided by State governments reports the data on environmental health and safety services. The preceding parts have dealt with the overall administrative structure for the provision of health services, general health services and construction of hospitals and health centers, and personal health services.

Environmental health programs have expanded from the early day sanitary measures for the control of communicable diseases or for nuisance abatement to include the maintenance of an environment conducive to health in the more positive sense. The broadened concept of official State responsibility for environmental services is reflected in the array of activities covered in this report: sanitation of water supplies; sewage and industrial waste disposal; vector controls; milk and food sanitation; occupational health and safety devices; and activities pertaining to the regulations, inspections, and education programs covering sanitation of hotels, camps, and bathing places, garbage collection and disposal, accident prevention, hygiene of housing, milk and food sanitation, and other enterprises serving the public.

The study includes only services provided by State government agencies. Most of the data were collected through personal interview with officials of State agencies providing services. While the health department is usually assigned the responsibility for most phases of environmental health programs, frequently authority for some programs is placed elsewhere in the governmental structure.

Selected Bibliography of Publications on Industrial Wastes Relating to Fish and Oysters

Public Health Service Publication No. 270. Public Health Bibliography Series No. 10. 1953. 28 pages. 15 cents.

Primarily, this bibliography presents selected references that report the effects of industrial wastes on fish and oysters in their natural habitats. It also includes some references on bioassay experiments showing the effects of industrial effluents on fish and oysters.

References were selected on the basis of their availability to American workers and are listed alphabetically by industry. Those that cover effects on fish of wastes from more than one industry are listed under "General References" and are keyed by industry symbols.

Social Information Report on Aid to the Disabled

Public Assistance Report No. 24. 1953. 47 pages; illustrated. 30 cents.

The Social Security Act authorizes grants to the States to provide financial assistance to needy individuals who are permanently and totally disabled by a serious physical or mental condition. State welfare agencies are responsible for determining eligibility for assistance under the program. This pamphlet is designed to guide social workers in reporting the social data which is used by physicians, social workers, and members of State's review teams to determine whether applicants qualify for assistance under the State's definition of "permanent and total disability" and to recommend appropriate services to aid them in rehabilitation.

The pamphlet suggests facts for the welfare worker to include in a socioeconomic evaluation report and techniques to follow in procuring the needed information about the applicant's age, marital status, social background and education, physical appearance, disability status, environmental factors of particular importance, and the applicant's own attitude toward his present position.

The socioeconomic report, the pamphlet stresses, must provide sound data and must present a picture vivid enough to enable the State reviewers to answer the question, "Is this applicant totally disabled by his impairment?"

A Comprehensive Program for Water Pollution Control for the Humboldt River and Central Nevada Basins

Water Pollution Series No. 52. Public Health Service Publication No. 294. 1953. 4 pages; tables. Available from the Nevada State Health Department or the California and Great Basin Drainage Basins Office.

This document is one of a series presenting comprehensive pollution abatement programs developed by the States and adopted by the Surgeon General of the Public Health Service in accordance with the Water Pollution Control Act.

The program outlined in this publication is based upon two reports by the Nevada State Health Department and the Public Health Service. Measures for control of municipal wastes and industrial wastes in the Humboldt River and

technical publications

Central Nevada Basins are outlined, and municipal sewage treatment needs for pollution abatement in the communities of the basins are given.

The Humboldt River and Central Nevada Basins include an area of approximately 52,400 square miles in arid north and south-central Nevada. The total population is approximately 24,600, 60 percent of which resides in the Humboldt River Valley. Irrigated agriculture, stock raising, and mining are the most important economic activities.

The Humboldt River, the basins' only major stream, originates in the mountains in the northeastern quarter and flows about 600 miles southwest to terminate in the Humboldt Sink. The surface waters are generally satisfactory for irrigation, livestock watering, and fish and wildlife production, but not for domestic use or for process water by existing industry without treatment. Due to migratory runs of trout, the section of the Humboldt River above Battle Mountain is considered an important trout producing area. A sanitary survey has shown that sewage pollution from Elko at times has reduced the dissolved oxygen content of the Humboldt River to less than 1.1 p.p.m.—considerably below the 6 p.p.m. objective of the Nevada State authorities to support trout.

Occupational Skin Diseases

Public Health Service Publication No. 306. 1953. 15 pages. 10 cents.

Dermatitis is the most common occupational disease that attacks the workingman. In such heavily industrialized States as New York, Ohio, and Illinois, two-thirds of all compensated occupational diseases are skin diseases.

Because of the importance of this problem, the Division of Occupational Health, Public Health Service, and the Bureau of Labor Standards, Department of Labor, have prepared this publication to bring information about the skin to those who work in factories and other places and to their supervisors.

It opens with a description of the skin, followed by brief paragraphs on indirect and direct causes of skin diseases. Sections on the prevention of occupational skin disease suggest steps employers can take in providing washing facilities, protective clothing, and protective creams. Workers are advised in matters of personal cleanliness, use of protective clothing and creams, and prompt reporting for medical attention. Selected references to literature in the field are also given.

Occupational Disease Reporting

Public Health Service Publication No. 288. 1953. By Victoria M. Trasko. 80 pages; tables. 40 cents.

The study and control of occupational diseases in the United States has progressed markedly in the past four decades, and a vast body of information has been developed on occupational diseases such as silicosis, dermatoses, and poisoning by toxic substances. However, there has been little success in obtaining adequate morbidity data in this area. Because of the lack of such data, the industrial hygienist has been impeded from doing a complete job of elimination and control.

The purpose of this study is to bring together existing fundamental information on universal reporting and on the incidence of occupational diseases in this country. The material presented is in three parts. The first reviews the current status of occupational disease reporting practices in this country. The second deals with an experimental project in the uniform transmittal of reports of occupational diseases to the Division of Occupational Health of the Public Health Service by 11 States through their divisions of industrial health, in 1950 and 1951. The third part presents available statistics which might throw light on the universal incidence of occupational diseases.

An appendix contains an analysis of occupational disease reports transmitted in the pilot study.

Divorces and Annulments. United States, by State and County, 1951

Vital Statistics—Special Reports. National Summaries. Vol. 38, No. 2, December 4, 1953

An estimated 381,000 divorces and 7,837 annulments were granted in the United States in 1951, according to this special report. This estimate compares with 385,144 divorces and 10,744 annulments in 1950.

Figures presented are tabulated by place where the decree was granted. However, data on divorces by county are not available in 11 States and data on annulments by county are not available for 20 States. No figures on divorces were obtained from six States.

This section carries announcements of all new Public Health Service publications and of selected new publications on health topics prepared by other Federal Government agencies.

Publications for which prices are quoted are for sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Orders should be accompanied by cash, check, or money order and should fully identify the publication. Public Health Service publications which do not carry price quotations, as well as single sample copies of those for which prices are shown, can be obtained without charge from the Public Inquiries Branch, Public Health Service, Washington 25, D. C.

The Public Health Service does not supply publications issued by other agencies.

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